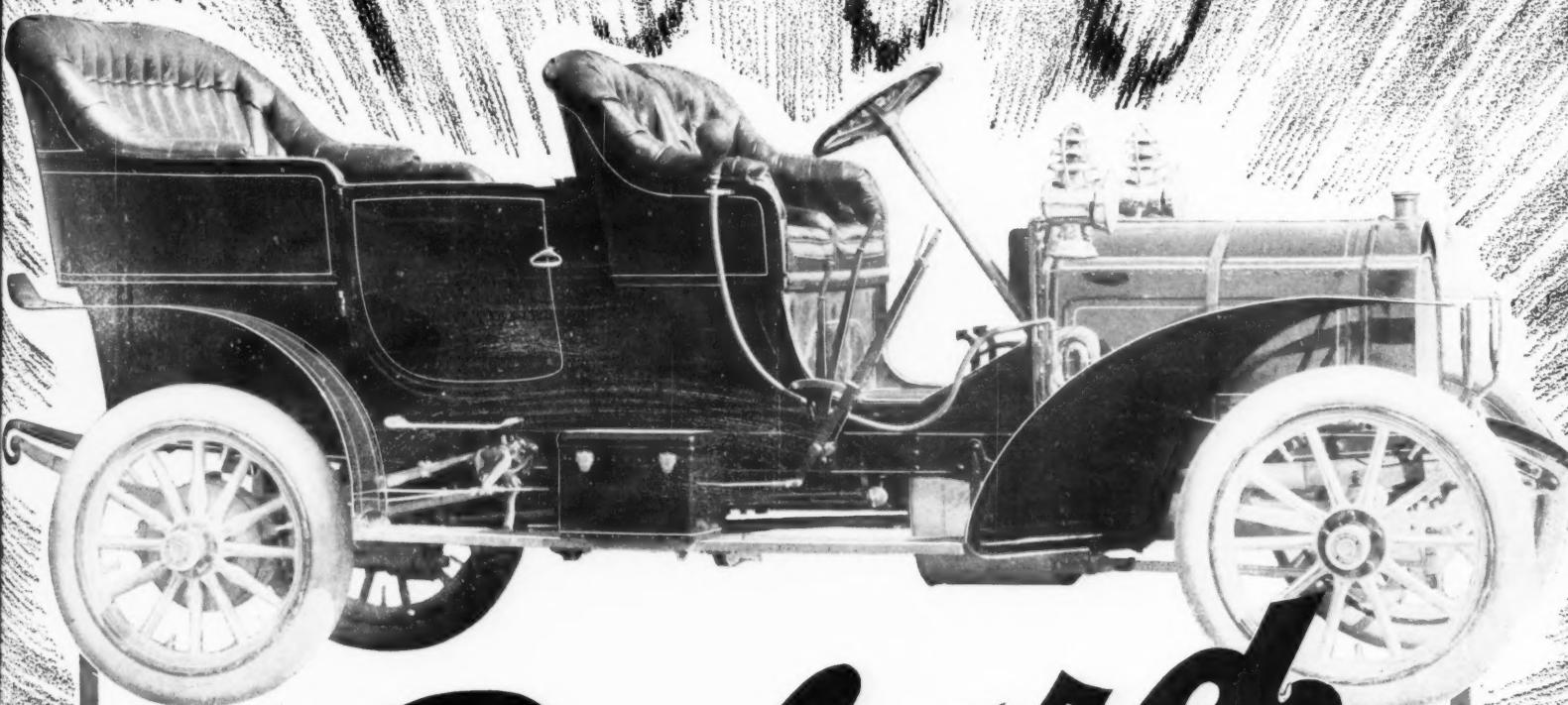


# MOTOR AGE

Vol. VIII No. 19

CHICAGO, NOVEMBER 9, 1905

Ten Cents per Copy



"*Packard*  
24"

A CAR as perfect as a Packard could not be the result of one year's work, nor the creation of one man's brain. It is only possible by cumulative effort, year after year, of the great organization of skilled specialists. It is like no other car. It can be measured by no other standard. It is a combination of perfect parts, every one of which reflects the pride of the man who made it.

Price, (with standard equipment) \$4,000 f. o. b. Detroit

PACKARD MOTOR CAR COMPANY, Dept. 2, Detroit, Michigan

New York Branch, 1540 Broadway

Write for Catalogue and name  
of the nearest Packard dealer  
Member Association Licensed Automobile Manufacturers

# Men Who Ride But ONE Hobby

are queer-looking objects to

THE CAPEN MOTOR CAR CO., St. Louis



This concern rides four—and rides them well.

Hobby No. 1 is the Locomobile; hobby the second is the Yale; hobby the third is the Orient, and hobby the fourth (and the hobby that helps wonderfully to make the other hobbies **rideable**) is Morgan & Wright tires.

Here is the reason for Hobby No. 4 as given in a letter from the Capen Co.:

We have found your tires to be very satisfactory as compared with other brands we have used, and have been able to sell a number of them to parties who store with us **simply from what they have seen of your tires on our Locomobiles.**

Evidently the Capen Co. make a hobby of M. & W. tires because the **tires** make a hobby of **making good**.

Many of their 1906 cars have been ordered equipped with **good** tires.

**MORGAN & WRIGHT, 309 Michigan Ave., Chicago**

PHILADELPHIA—Cor. Broad and Vine Sts.  
BOSTON—228 Columbus Av.  
CLEVELAND—347 Huron St.  
DAYTON—417 E. 5th St.  
DETROIT—265 Jefferson Av.

NEW YORK—214 W. 47th St.  
17 Warren St.  
SYRACUSE—212-214 S. Clinton St.  
MINNEAPOLIS—708 Hennepin Av.  
ATLANTA—35 Edgewood Av.

ST. LOUIS—538 Vandeventer Av.  
DENVER—1562 Broadway.  
LOS ANGELES—940 S. Main St.  
SAN FRANCISCO—1067 Mission St.  
PORTLAND, ORE.—86 Sixth St.

## *Are YOU a Ford Agent for 1906?*

If not, get the Agency for your territory. It will be worth your while. We do not care to announce particulars about our new models at this early date. There's enough people copying Ford ideas and we want Ford Agents to have an exclusive snap next season.

We can promise you, however, that the Ford proposition for next year will be the biggest money and reputation maker ever offered to an Automobile Agent.

You have heard the rumors about a "Ford runabout," but the most glowing accounts of our car will fall far short of the actual car we have for next year.

Write and get in touch with us.

**FORD MOTOR COMPANY :: Detroit, Michigan**

*Members American Motor Car Manufacturers' Association, Chicago.*

Canadian Trade supplied by THE FORD MOTOR CO. OF CANADA, Ltd., Walkerville, Ont.

# MOTOR AGE

VOL. VIII NO. 19

CHICAGO, NOVEMBER 9, 1905

\$2.00 Per Year

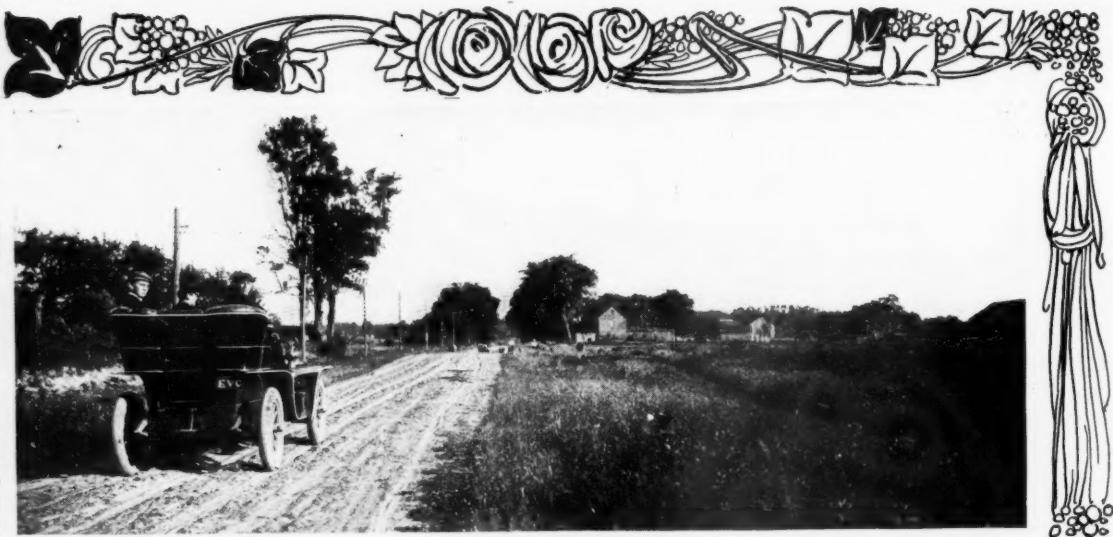
## MOTOR SCENES IN NEW ENGLAND



NEW ENGLAND is rich in tradition and attractive to automobile tourists. Radiating from all cities there are drives, making a network over which scores of cars continually pass. Connecticut, one of the smallest

of the states, is conducting a great good roads campaign; is probably building a larger percentage of mileage than any other commonwealth, and takes a certain pride in the fact that it is building its roads better and cheaper than any other state in the union. But there are districts where the good roads movement has not yet reached and where the highways continue to be the same old red gravel upon which the less prosperous husbandmen work out their annual taxes, or, at least, a part of them. For cars not of the asphalt parade class one of the most delightful short runs in central Connecticut is from Hartford to Tariffville and Granby. Tariffville is but the tail of the dog town of Simsbury, but is growing so fast as to wag the dog, while Granby is the scene of more romance than could be logically crowded into the average historical novel by even a Churchill.

Tariffville possesses all the features of an attractive automobile Mecca; there is an old hotel, modernized with new paint only, and the latest books on tours show



ON MOST OF THE NEW ENGLAND HIGHWAYS THE TROLLEY ANTEDATES THE MORE MODERN MEANS OF TRANSPORTATION, THE MOTOR CAR

that the proprietor is possessed of an excise license. It is but 12 miles from Hartford and to get to it the motorist goes through an endurance run and a hill-climbing contest that makes Eagle Rock and Pecousie hills look like tessellated flooring. It would only be necessary to brush a bug from one's collar to send a car and its occupants to kingdom come. It is the kind of road that breeds a certain respect for the sure-footed mule. Across the plains the scenery is interesting, for great white tents, 9 feet tall, cover 1,500 and 2,000 acres each. Under these tents tobacco grows. The natives know good Havana tobacco when they see it, for most of them raise it. It costs 12 to 20 cents a pound to grow it and brings 40, so the prosperity of the farmers is great. They are not so much opposed to automobiles, for most of them buy every novelty that comes out, from a new patent churn to a self-playing piano. They all have money to spend.

The village barber has scores of visitors, who see him three times each week, which is uncommon in high grass country.

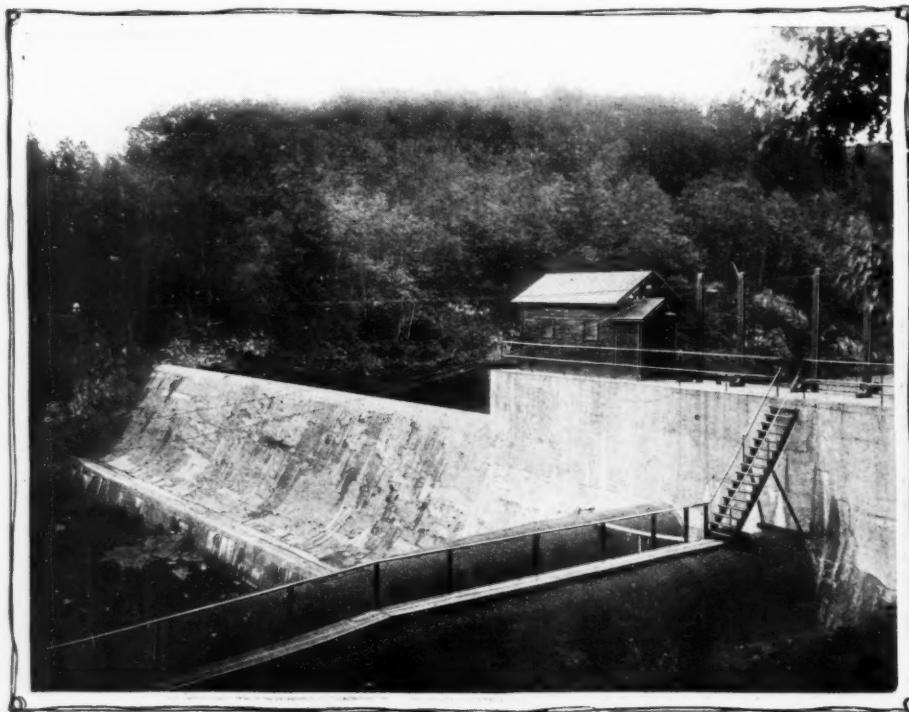
There are stretches of improved macadam and telford roadway, passing through some of the towns, but most of the way would afford the best known cure for a torpid liver. The heavy rains pour down the mountain sides and furrow deep holes, while the hand of man has raised water bars and thankyermans which cause the front end of a long wheel base car to oscillate with the rear seat passengers. There isn't a water bar that doesn't boast of the number of springs it has caused to break, and for a mile and a quarter there is a stretch of sandy loam where tobacco grows finely, which holds the heat uncommon well, and which has been the scene of many tires going wrong. Still, there isn't a feature about the trip which the motorist wouldn't suffer willingly to get there.

Tariffville isn't so much of a town, in

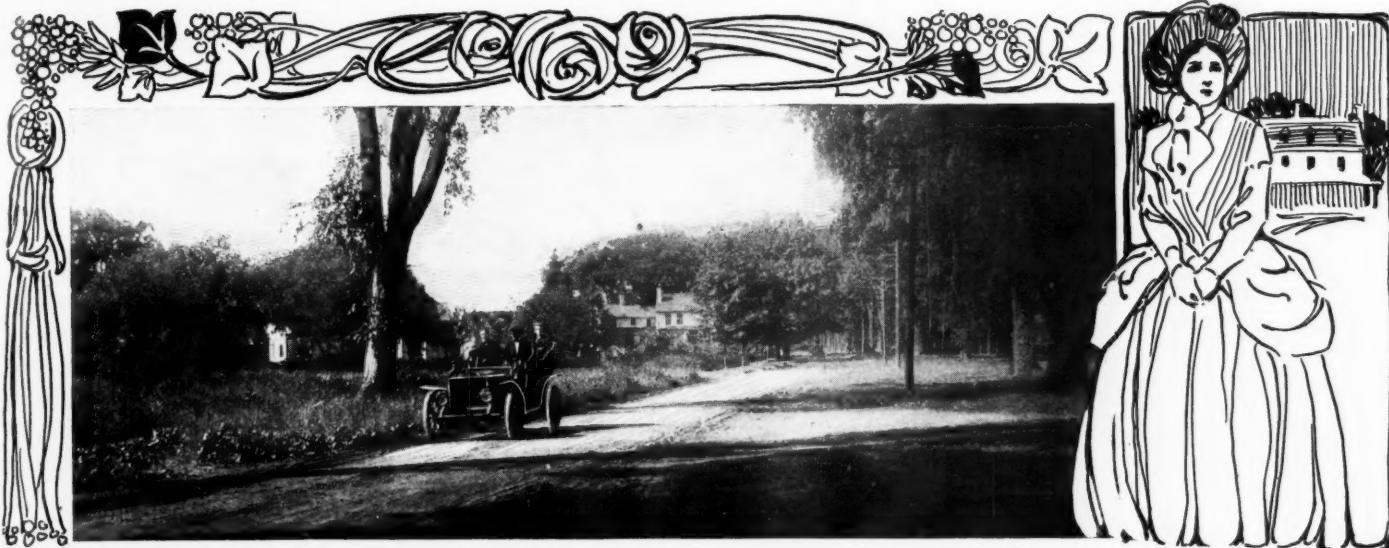
a way. There is the Farmington river rolling by, which water power has been used by a lace mill and an electric light generating plant. Advantage was taken of one architect's handiwork and the natives have to count four from one end and five from the other to pick their own domicile out. Nobody could get jealous of their fortunate neighbors where all houses are alike and the skyline would be pretty monotonous to look at from the hills above if it wasn't for the regularity being occasionally pierced by a school house or church or the town hall.

The Tunxis band of Indians resided about Tariffville and everything in town is Tunxis. There is the Tunxis river, Tunxis hotel, Tunxis laundry, ad lib. Tradition tells of the residence of Lord Griffin early in the English occupation. Lord Griffin didn't anticipate the coming of automobiles, but he well knew the power of gasoline. The Indians troubled him greatly. They stole his sheep and hens. So, in a little cove where the water is still and the current nil, Lord Griffin stealthily applied some oil. Then he sought to make peace with the Indian chiefs. He would burn up the river and all the fish if the Indians didn't keep their side of a line he established. His proposition was laughed at, so the torch was applied. Sure enough, the waters blazed. Before the oil had burned off a truce had been declared. Tariffville land records continually blossom forth reference to his lordship's line as boundaries of farms.

All the land around Tariffville is owned now, or once was, by a Mitchelson. Two brothers, Ariel and Joseph C., remain to boast of their proud heritage. Ariel is located at Tariffville and drives about in a big Winton car. J. C. and his family manage to get back summers, but their address other times may be Kobe, Japan, or Sydney, Australia. Although it is a bad country for electrics, with hills eating up 130 amperes of current, J. C. does his motoring in a Columbia victoria. While Joe Mitchelson was in some lonesome and faraway location of the footstool increasing his coin, or book collections, some enterprising capitalists threw a dam across the Farmington river and flooded some



THE TARIFFVILLE DAM—MOST NEW ENGLAND STREAMS ARE NOW HARNESSED



A SPLENDID STRETCH OF EXCEEDINGLY SMOOTH ROAD, GUARDED BY TALL SHADE TREES, WINDS ITS WAY THROUGH OLD WINDSOR

meadow land of his. So the Mitchelsons have all the electric current they can use.

The Tunxis house has always been famous as a place to trade horses. A whole regiment of David Harums make periodical trips to Canada and come back with "forty head," no more, no less. They rather resent the automobile, but the proprietor is glad to note a pleasant day, especially Sundays, when a row of them line up at the hitching shed. The Tunxis house dinners are famous, and have been, down the ages.

From Tariffville to Granby is a short ride. Some tortuous hills have to be negotiated, and the road is good. Part of the way the road runs through an old canal bed, the Northampton canal. When the first march of manufacture began in New England and transportation became a problem, \$4,000,000 was raised to build a canal, with an outlet at New Haven. With the advent of the railroad the canal went out of business and the Northampton branch, or canal road, as it was called before it came to the consolidated system, runs on the towpath, while the highway runs in the canal bed itself. The scenery is particularly charming from Tariffville to Granby, since it is left wild and is, for the most part, unspoiled by cultivation. Granby raises important crops—33 degree politicians and jurors.

The chief feature of interest in Granby town is Old Newgate. Remaining intact is Old Newgate prison, where British prisoners of war and tories were confined in the revolution, and there is hardly a motorist in Connecticut who has not made a run to Granby to view the shops, and to make the descent down the deep shaft by a rickety ladder route to the copper mine, hundreds of feet under ground, and tunneling under a mountain side where runs an icy cold stream and where, in rough-hewn underground barracks, the most obstreperous convicts were confined.

In the town of Granby proper there is one house in which Washington and Lafayette are not charged with spending a night. There are so many homes in Connecticut about which legend has these distinguished personages as proud guests, that the impression goes out that the first president and French court dandy sampled

each habitation in rotation. Any fast car will quickly take a party from Granby to Oil City.

Windsor is famous as the home of Oliver Ellsworth, who was an early chief justice, and whose old home, typically colonial, is now owned by a chapter of the Daughters of the Revolution, and Colonel E. N. Phelps, who still lives. The motorist who runs down Colonel Phelps, who can tell you how many times removed he is from Cotton Mather, would think that Uncle Sam had stepped out of a double-page funny paper supplement. He's tall and lank and close shaven, except for a little whisker of gosh-ding-its, from out of which the honk honk of a motor horn might scare up a couple of meadow larks or a field mouse or two. Windsor, too, claims Fitch, the inventor of the steam-boat, and Captain Christopher M. Spencer, inventor, who, when a boy, rode around the country described above in a steam automobile of his own making and

informed the natives of Lee's surrender and the close of the war.

Windsor is on the main line of travel from New York to Boston and a stream of automobiles ebbs and flows through the town. There is a bad turn under the railroad, where a grade crossing was eliminated, where only one vehicle can pass at a time, and as escapes from serious accident have been numerous, it is known as Colonel Phelps' deathtrap, since the colonel designed it. Windsor grows tobacco and as land is worth more for crops than for building lots, its building progress is slow, despite the fact that it is one of the most beautiful of the Hartford suburbs. The run from Windsor to Hartford is over a fine macadam highway, with only one hill, Stoney hill. The run to Springfield is longer and takes cars over a fine highway through Windsor Locks, Warehouse Point, Enfield street, and Longmeadow, and by way of Pecousie hill, into Forest park and Springfield.



THE FAMOUS OLD FARMINGTON RIVER, WHICH TASTED OIL MANY YEARS AGO

## O. K. ON MILITARY CAR

### Germany Conducts Tests and Decides Automobile Rivals Railway Train in Speed

Berlin, Oct. 28.—That automobiles will soon be used in warfare is the opinion of many motor enthusiasts in Germany, which has devoted much money to the encouragement of research for rendering the government one of the foremost in military affairs. At the instigation of the military authorities a test has been given to try the efficiency of automobiles in transporting guns and troops and the results, although experimental in a large part, serve to show, the Germans assert, that motor wagons for the transportation of troops, guns, ammunition, soldiers and even heavy pieces of ordnance will be an assured success before many years.

The test, which was principally given to try the efficiency of two-seated motor wagon as transporters of troops, was held on the country roads near Wien and manoeuvres were gone through by the troops similar to those which might be used in opposing or retreating from an enemy.

With Wein as a center, forces were distributed, lines of men thrown out and ammunition distributed. Bridges and hills were seized as vantage points and men were retired after the most approved military tactics.

As is usual with careful Germans, accurate officials took account of time and gasoline used, and of weights and measurements, and the results show that the automobile is a fair competitor with the railway in transporting troops and is far superior to the footwork of the infantry.

The first experiment consisted of a dash from Purkersdorf to Tulln between two forces, one mounted on automobiles with guns and ammunition in automobile wagons, and the other a regularly equipped force of German cavalry and infantry—two companies. Needless to say, the automobiles arrived at Tulln and took possession of all the vantage points far in advance of the enemy. Arms and ammunition were distributed and the men stationed with all the regularity of war. The distance between the two points was covered in good time in spite of the road being a little slippery from recent rains. Darracq machines were used by the troops.

The second experiment was between two companies of men provided with motor cycles, two-seated vehicles transporting wagons for ammunitions and arms and officers in automobiles. The run was between Traiskirchen and Tulln by two different routes, the one 55 kilometers and the other 50 kilometers long.

The best time made by any one of the 50-kilometer route men was 2 hours, a Bayard-Clement machine-gun automobile reaching Tulln in that time, making a little over 30 miles an hour.

The party going over the 55-kilometer route appeared in Tulln in 3 hours and 7 minutes, the 60-horsepower Mercedes machine-gun automobile leading the half-dozen scout two-seated vehicles. In the

meantime the infantry was hiking along as best it could, but despite the fact it hay-footed, straw-footed to the best of its ability, it was distinctly outclassed by the speedy automobiles, which dashed over the country roads with an aggravating ease. So successful were these tests that the German officers who have advocated military motoring feel they have scored a big point over the old fogeys who can see no good in anything modern. It is believed that the trials won motoring many friends in the army.

### ROYAL IN A. L. A. M.

New York, Nov. 4.—The most important action taken at the annual meeting of the Association of Licensed Automobile Makers on Wednesday, news of which was not given out until after the executive committee meeting the following day, was the admission to membership of the Royal Motor Car Co., of Cleveland, O. It is officially announced that the new licensee agreed to pay back royalties on all cars manufactured since January 1, 1903.

Another change in membership was the purchase by the association of the license for manufacturing and importing held by the Worthington Automobile Co., of New York, which now ceases to be a member. The company is now interesting itself in the manufacture of steam vehicles.

The annual election resulted in the full list of incumbent officers and the executive committee being chosen for another year. These officials are: President, Charles Clifton, of the George N. Pierce Co., Buffalo, N. Y.; vice-president, William E. Metzger, Cadillac Automobile Co., Detroit, Mich.; secretary, L. H. Kittredge, Peerless Motor Car Co., Cleveland, O.; treasurer, H. H. Franklin, H. H. Franklin Mfg. Co., Syracuse, N. Y.; executive committee, Charles Clifton, George N. Pierce Co.; F. L. Smith, Olds Motor Works; E. H. Culler, Knox Automobile Co.; S. T. Davis, Jr., Locomobile Co. of America, and M. J. Budlong, Electric Vehicle Co.

A report was received from the newly incorporated Association Patents Co. to the effect that it was now practically at work with the patents interests of the members of the association. A report from the show committee was received stating that all of the space for the show in Madison Square garden has been allotted and that artistically the show will surpass not only everything ever held in this country, but also the big spectacular exhibition of Paris.

### FRANCE HEDGING

Paris, Nov. 4.—Special cablegram—It is believed by those on the inside that the French authorities are somewhat shaky on the stand they have taken against racing and that there is a move on foot to hedge a bit. This belief is borne out by a story which appeared in the Figaro yesterday, which stated that it is probable that a speed race will be run over the Auvergne course next year by the Automobile Club of France. This is expected to lead into developments which may result in France not only defending the Bennett trophy, but the Vanderbilt as well, despite its announcement that it washed its hands of the racing game.

## TOUGH TRIP TO COAST

### Chaydeane's Motor Cycle Ride Across Continent Marked by Rough Going and Tumbles

Buffalo, N. Y., Nov. 8.—Members of the Buffalo Motor Cycle Club are rejoicing over the feat of their captain, William C. Chaydeane, who has succeeded in smashing the transcontinental record for motor cycles, having crossed from New York to San Francisco in 47 days 23 hours 50 minutes, beating the old record of 51 days. Chaydeane reached his destination October 31, after a strenuous trip, on a 1906 model 44 Thomas Auto-Bi, covering over 4,000 miles of mud, dust, prairie, sage brush and snow. He met with accident after accident, escaping death many times by a narrow margin. He plugged along, day after day, with insufficient sleep, very frequently going 2 or 3 days without a square meal. He left New York city September 30. He was up against it from the start, expecting to leave New York on a Monday, but was delayed by the express company until Wednesday. As he stood before the rooms of the New York Motor Cycle Club, the rain was pouring down in torrents. The grasp of a hand from some of the members who were present, a goodbye and good luck from R. G. Betts, president of the F. A. M., who pinned the emblem of the federation on his flannel shirt, and he was off. From New York to Albany he found fairly good going. Apart from a few punctures he had no particular difficulty, except during the second day, when the rains had made the roads extremely treacherous, and in one slippery place he pitched into a ditch and suffered his first bad spill. From Albany to Buffalo he found nothing but mud and rain. He reached Buffalo about 1 a. m., having encountered a seething torrent of rain just outside of Rochester. From Buffalo to Erie he found good roads and he thought that at last his luck had turned, but by the time he had reached Cleveland, outraged nature had begun to take a hand in the game, and he was compelled to go to the hospital, owing to a severe indisposition, brought on by exposure and irregular meals. The doctors told him that a rest was imperative, but he left the hospital, tightened up a couple of loose nuts on his wheel and started west.

Chaydeane eventually reached Chicago, but here he met a friend who compelled him by sheer force to lay off for 24 hours and go to bed. This rest, together with some attention to his trouble, put him in better shape, and from Chicago westward he was feeling much better. He was averaging nearly 100 miles a day, but owing to occasional mistakes as to the right road his mileage was necessarily much greater than if made by rail. He finally reached the vast prairies of the western country, and from Omaha on his trip was marked almost daily by incidents of the most varied nature, sometimes humorous and sometimes almost serious. The conditions of the roads, in many cases covered with sand and mud, the steep grades, and the almost daily spills served to delay his

journey. For 3 days he remained at Ogden, tied up by a snow fall which made the roads simply impassable for a two-wheeled machine. Spills were so ordinary that when at one place he ran foul of a snow bank at the foot of a hill and pitched over a 30-foot embankment, his first question to the cowboys who picked him up, after being unconscious over an hour, was as to the condition of his machine. After a little vigorous treatment with a crowbar and a couple of wrenches, which he took from a nearby threshing machine, he managed to bend it back into shape, so that the wheels would turn. Mounting again, he bumped over the rocky road to Ocho, and finally reached Ogden, after riding nearly all night.

#### PORLTAND AFTER GOOD ROADS

Portland, Ore., Nov. 6—The Portland Automobile Club has begun a good roads campaign that is to be carried on strenuously during the year 1906. There will be no lack of money to push it. At a meeting of the club at Claremont tavern it was decided to apply to the Multnomah county commissioners for improvement by the county of 10 miles of the Linnton road, extending from Portland to Claremont, the club entering into a contract with the county to keep the road oiled and repaired at the expense of the automobileists. A continuous effort is to be made by the club to stir up interest in automobiling, improve the beautiful roads about Portland, and add to the number of high grade cars in commission here. All the automobiles in this city have been bought within the last 2 years, but only a few are of the powerful four-cylinder type. There are now 200 machines, and more than 125 of them have been bought this season. The Lewis and Clark exposition did not do much for encouragement of automobiling. No automobiles, bicycles or horses were allowed in the grounds. Only one local dealer made an exhibit at the exposition. The activity in the automobile business in Portland this year is due to the hustle and pluck of the dealers.

#### HINTS OF FRENCH DEALS

London, Oct. 28—It is said that preparations are in progress here and in France for the flotation of the Panhard & Levassor and Darracq companies, but nobody has been able to break through the official reserve so far as to get either confirmation or denial. One would not be surprised to hear that Darracq had decided to get the public's support, for the firm has found its way into the hands of capitalists who must have acquired it with that eventuality in view; but that Panhard & Levassor should be designing such a move is an eloquent indication of the opinion of its owners. People don't sell such businesses until they think that high-water mark has been touched. Panhards will be over-subscribed. That is certain, but all the same we may take it for granted that those who are now running it think that the French motor-car industry has very nearly reached its zenith. Panhards would float easily at \$5,000,000, but in all probability the conversion will not be a simple one of transferring to the public entire proprietorship.

## IS HUB DEEP IN DUST

### Megargel Finds Oregon Roads Must be Navigated Carefully on Transcontinental Tour

Drewsey, Ore., Oct. 30—Four hundred miles more and Portland! This to an eastern reader, surrounded by good or fair roads, sounds easy, but as I sit here and gaze at the mountains that surround Drewsey, mountains that require, in many instances, 10 and 12 hours to drag up wagons of supplies, I know that it is rather more than 2 day's run to the Keats' garage in Portland, and think that the Reo Mountaineer will be making good if it negotiates the distance in a week. It takes a freighter 11 days to make the run from Ontario to Burns, 150 miles. This will give an idea of how hard a pull it is through the Blue mountains of Eastern Oregon.

Rain visits Oregon—that is to say, the eastern section of the state—at rare intervals. In the western section it is all rain, or, at least, so much so that the people residing in Portland are said to have web-feet. Just at present there are about 10 inches of fine alkali dust on road and trail. In some places, where there are the remains of mud holes, the dust is 14 to 20 inches deep and so fine that an automobile tire sinks the entire distance, until it rests on the solid ground. The greatest care has to be exercised in driving over this road, as to sink into one of the dust holes means the stranding of the car and sometimes an hour's work with jack and spade to get it out.

The weather is all that an automobilist could ask for—cold in the mornings, but warm and comfortable driving after 11 o'clock, when we usually strip off sweaters and outer jacket. The roads are well laid out and the majority of creeks are bridged. The grades are evenly divided all the way to the top of the mountains, and then we coast until brake bands are burning.

At Boise City, Idaho, just prior to our starting off, we ran into L. L. Whitman, the record-holder. Whitman and I have been reading each other's doings for the past 3 years and it is needless to say that we had a good half hour together, comparing notes. Whitman has made the trip from the Pacific to the Atlantic twice. This will complete the second trip I have made from the Atlantic to the Pacific, so we found much to talk about, as our routes for the greater part of the distance, lay over the same course. Accompanying Jim Taylor, in the latter's Franklin, Whitman ran out 15 miles toward Ontario with the Reo Mountaineer and then wished us good luck.

Anyone traveling over this section in an automobile cannot help but be struck with the excellent opportunity for some automobile enthusiast to bid in the stage line running from Ontario to Burns. The United States offers this mail route to the lowest bidder, with certain stipulations, every 4 years. It will be awarded again this fall. Every 15 or 16 miles along the route are stage stations, where the horses

are changed and the mail is carried through from Burns every 24 hours. Burns is situated 150 miles from Ontario, the nearest railroad point. Enough money can be secured for carrying the mail to pay expenses of running the automobile stage line, and carrying passengers would all be velvet to the promoters.

Gasoline can be had from every little store along the route, as I found out from my last trip, although to take no chances I started out from Ontario with 25 gallons. At Vale, Westfall and Drewsey, gasoline can be secured, although the further west we travel the more gasoline costs, as the freighters charge in the neighborhood of 2 cents a pound for everything brought into Burns.

Owing to the fact that we are obliged to use our low speed so much in the mountain climbing, we have been running nights, or until 2 o'clock, ever since entering Oregon. Our Dietz searchlight enables us to follow the dangerous mountain trail with perfect safety, lighting up the narrow pathway, until rocks and alkali pits are as plainly shown as by sunlight.

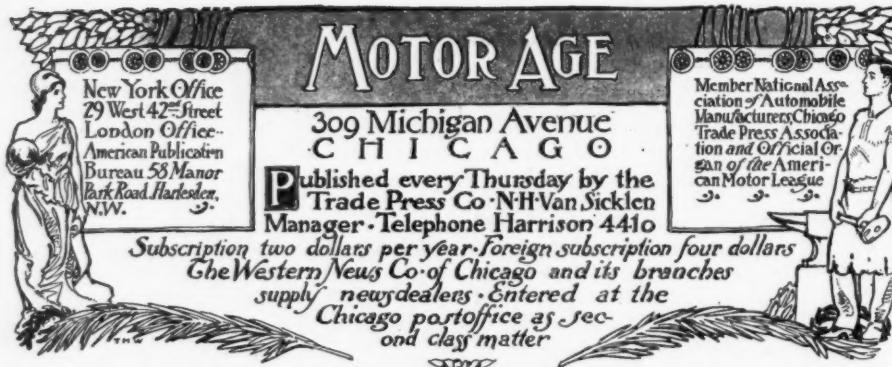
Our Mobiloil, shipped to different points along the route by the Standard Oil Co., has never failed us, nor have we experienced the slightest trouble from our engine or transmission, both of which we keep well flooded at all times.—PERCY F. MEGARGEL.

#### FIRE IN APPERSON PLANT

Kokomo, Ind., Nov. 7—Special Telegram—Apperson Brothers' automobile plant was attacked by fire during last night and the old original frame building, the first floor of which was recently vacated as a machine shop and turned into a junk room, and the offices located on the second floor suffered practically total destruction. The flames, however, were confined to this building, which was only two stories in height, and to the one-story brick building just back of it, which was formerly used as stock room, and to the blacksmith shop, where the damage was only slight. Mr. Apperson states that the loss is covered by insurance and that the delay, so far as getting out the company's product is concerned, will be very slight, inasmuch as practically everything of value had been moved out of the departments which were destroyed, to the new building upon its completion a short time ago.

#### TALKS CRANKSHAFTS

New York, Nov. 6—Crankshafts and their bearings were the subject of discussion at the November meeting of the mechanical branch of the Association of Licensed Automobile Manufacturers, held last Wednesday. Various members of the organization, superintendents from the factories of representative manufacturers, exhibited drawings of their crankshaft construction and after giving all the dimensions, telling the pressure on the bearings, the material used, methods of construction, of lubricating, etc., answered such questions as the others chose to put. The subject for the December meeting will be the best method of inspecting and testing cars, so as to be certain that they are all right before shipping them from the factory to the branches and agencies.



## AUTOMOBILES AND FREIGHT RATES

WHILE President Roosevelt is endeavoring to bring the railroads to time over the question of freight rates, the automobile is going ahead, regardless of red tape, showing the world how easily and how cheaply it can haul passengers—and if passengers, then freight—at a rate per mile far below what a railroad asks and receives. By the time congress and the president and the railroads have come to any sort of an understanding—mutually or forcibly—the motor car will have made such strides before the commercial world as to force the railroads to do what all other means have failed to do in the history of the country.

Just what railroads can afford to do in the matter of cutting rates for hauling passengers or freight and just what they will do are two matters that differ considerably just now, but a few short years hence what they can do and what they will do will be nearer the same thing, if the automobile keeps on making the record it has been making during the past few years.

The recently finished economy test has opened the eyes of the commercial and traveling public and if railroad officials have studied the matter they must have received a jolt of no small proportions. Outwardly these officials will never admit this; inwardly they will set about to head off the avalanche that will soon engulf any movement that may be the means of taking away any portion of their business.

One motor car carried a load of passengers at a cost of 4 mills per mile per passenger; it could have carried 150 pounds of freight at the same rate; in fact, it could have carried more than this amount of freight.

There is no immediate danger that the motor car will interfere with the railroads in the matter of passenger or freight business as far as long hauls are concerned, but in matters of short hauls the day of the steam locomotive on steel rails is doomed, and the trolley, too, will have a competitor up to which it must look.

The motor car will not be a factor in long hauls, or even in middle distance hauls, until some improvement has been made in highways, but that will come as fast as the motor car goes on showing such remarkable work, and as fast as the highways receive improvement, then just so fast will motor cars become thorns in the sides of the railroads.

In earlier days canals were established

as a means of holding the railroads down to legitimate and reasonable freight and passenger rates, but the canal boat succumbed to the progressive locomotive, whose one weapon was speed, notwithstanding increased carrying charges. The motor car has already proved the locomotive's foe in the matter of speed, so that in this respect it is not handicapped, as was the canal boat. Now it is gradually creeping up on the locomotive in all ways and has already passed it in point of economy.

Although speed is a large factor, dollars and cents count for everything in the commercial world. The motor car, with its already marvelous speed and its economy of operation, must, then, become the locomotive's rival in the world of commerce.

The motor car has its drawbacks—it is not a perfect piece of mechanism—but it is young and is making headway. It is not blessed with a smooth track upon which to travel, but it is not handicapped by extensive costs for rights of way, track and roadbeds. It must, it is true, depend upon the public highway for its track, and the highways must be far better than they are now if the motor car is to perform its function of regulating railroad freight and passenger rates.

Like all new things, there will be some opposition to such a use of the public highways, but it must be remembered that it is as reasonable for the motor car to

transport freight and passengers over the highways as it is to haul corn and wood and other necessities over them in horse-drawn vehicles, and that it can be done cheaper and quicker than by horses and as quick and cheaper than by the locomotive. It must also be remembered that the citizen is receiving the benefits and not the Wall street system, and when this is recalled the public will too willingly give its consent to the use of highways by motor cars.

The system will be busy for a few years to come with its own affairs and may not give heed to the advance of the motor car until its influence shall have begun to show on the earnings of the railroads. Then the system will sit up and wonder. It will be futile to try to head off the motor car—it is now too well established and too much of a necessity to be driven out of the commercial field—and the system, being made up of wise minds, will probably climb into the band wagon. As the great American people stamp approval of the motor car, that much faster will good roads come.

The economy test of the New York Motor Club was little thought of a few weeks ago; a short time hence it will be a topic that will cause more thought on the part of the commercial world than any act congress could perform in the matter of passing freight-regulating bills. It will have set the entire world to thinking—railroad owners and officials, the merchant and citizen, the motor car manufacturer. The latter will for a time devote himself to study in order that the defects found to exist in motor car construction—and it must not be supposed that none was found through this test—may be remedied and that another test may prove more satisfactory than this one.

There will be an effort on his part toward making the motor car what it must eventually be—the balance wheel of the railroad, if it does not go further and surpass the latter as to trade places with it entirely. It will bear watching, this little giant of the road, not by the constable and the dinky little municipal official, but by the selling public and by the buying public.

## EARLY SAMPLES AND THEIR EFFECTS

BY THE time the automobile shows have come and gone the manufacturers of automobiles who have waited until the last moment to produce their new models will have learned the wisdom in the story of the early bird and the worm. Those makers who already are out with their samples will have practically sold their outputs ere the shows take place. Some of the agents who would have attended the shows will remain at home, for, having selected their lines and placed their orders, they will secure better results by staying home and selling what they have contracted for rather than waste time and money going to shows. As it is, the late makers will take what is left in the matter of agents and it is by no means certain that what is left after the plate of apples has been picked over is worth taking.

The modern manufacturer has no fears of a rival stealing his ideas. He knows

he is original and that originality will be appreciated; that as long as he builds good cars, marked with improvement from season to season, he need not suffer in the matter of sales. The late maker will have learned before another season passes that he must have his models out as early as his neighbor, and the result will be that all will be on the market long before the previous year's models have ceased to run under sunny skies. With all producing cars at such an early date, it means that earlier shows will be forced upon the maker and the public, and that the selling season, instead of beginning in the spring, will open at the dawn of winter and will not be hindered by cold and snow.

From all evidence that is at hand it would appear that the early show is soon to come, that the late maker will be unknown, and that the man who wants a next season's car can have it long before the season arrives.

# JUMP SPARKS

Now let the railroads hold an economy test if they expect to meet the automobile on common ground.

The czar of Russia seems to be having about as tough a time with his subjects as is the mayor of Chicago with the windy city motorists.

After all, France has changed its mind and will hold a big road race, which suggests that some one did remark that there was a little bluff left in the czar.

It is at least a little satisfaction to automobilists to know that the searchlight of the daily press has been turned on football instead of automobiling, even if it will be for only a month or less.

It isn't true that Senator Morgan is to run an automobile carnival on the ice on the Hudson river this winter. The senator is absolutely loyal to ocean beaches, and, besides, he has one or two to discover before tackling anything else.

Mayor Dunne of Chicago had a little taste of what other motorists receive too frequently when, in starting on a speech-making trip in an automobile, the axle of the machine struck a sewer cap and was temporarily wrecked. This ought to suggest things to Chicago's chief executive.

The best evidence of the popularity and utility of the automobile is its growing use on the part of the chiefs of police and other municipal department heads all over the country. The only trouble is the automobile policeman now has a distinct advantage over all other searchers, which is somewhat unfair.

When all the election returns are in the automobile will come in for its share of glory as a campaign adjunct.

This is the sort of weather that causes me to forget he has a water-cooled motor unit after the bill for new cylinders has been received.

By the time the foreign makers have studied the result of the recent economy test here, they will have received another bolt to their think tanks.

There's a good deal of doubt as to what will happen to that New Jersey automobile license law after the lawyers and the courts get through with it. It ought to be pretty well picked to pieces.

Judging by the quantity and quality of motorphobia that has existed the season through, one may well fear the assembling of the various legislatures the coming winter. The anti-motorists will go more with a good many feet.

In forty-five counties in Illinois, Iowa, Michigan, Indiana and Wisconsin, where county fairs and street carnivals were held, seventy people were injured, some of them being performers and others occupants of horse-drawn vehicles. For once the automobile was not to blame.

Whatever mean things may be said about automobiles and automobiling, automobiles tend to teach patience, self-reliance and forebearance. Ask the man who has wrestled with a balky motor, repaired punctured tires or has run up with traffic automobile regulations or persevere with police officials all over the country.

## THE WEEK IN BRIEF

William C. Chaydeane's feat of crossing continent on motor cycle in 47 days 23 hours 50 minutes arouses admiration of Buffalo champion overfeat of their fellow townsmen.

So many applications received for space at Chicago show that Manager Miles is forced to delay announcement of allotment for another week.

Germany tests military cars and endorses automobile for military use, declaring it to rival railway in point of speed and usefulness.

Jap Clemens, in a National, smashed 100-mile track record at Indianapolis, doing tenacity in 1 hour 53 minutes 21.4-3 seconds.

Percy Megargel fights dust in Oregon and fears that last 400 miles into Portland is going to be far more strenuous than it seems.

Belief in Paris that Automobile Club of France will promote race over Ardennes circuit next year.

Red omnibus wins economy test of New York Motor Club, with Red runabout second.



ALONG THE HUDSON EN ROUTE TO ALBANY

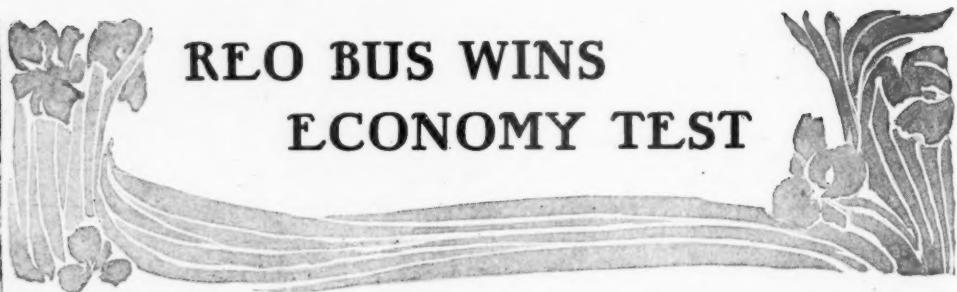
**N**EW YORK, Nov. 6—All of the original entrants in the New York Motor Club's 6-day economy test took part in the final stage of the journey from this city to Southampton, L. I., and back. Compound No. 5 had been the victim of a series of mishaps. It had stripped a gear on the way to Philadelphia the first day, secured a new transmission from the factory and started again, only to plunge into a ditch

in the darkness and break an axle sleeve. It was on hand, though, for the run to Albany, but at Cold Spring it went into a fence, through its brake giving away on a down grade. The decision of the judges gave the honors to the Reo bus, with the Reo runabout second. The bus averaged 4 miles per mile per passenger, carrying ten.

Just out of town on the run to Albany the gear of the Frayer-Miller went to the bad, necessitating a return to the city. A new transmission was wired for and shipped, but it failed to arrive in time to cover the Albany stage by night running, as was contemplated.

The run to Albany and back included a somewhat strenuous struggle, with bad hills, strange roads and darkness, on the outward bound trip, yet the 150 miles were covered in time around 10 hours. The voyagers profited by experience on the run home, made a start nearer to 7 o'clock and beat the outward bound time by at least a good full hour.

## REO BUS WINS ECONOMY TEST



The run to Southampton and back, over good roads and level all the way, barring the short stretch through the Shuinecock hills, was a cinch. On the homeward trip most of the cars reached the final garage somewhat before 5 o'clock in the afternoon.

### RESULT OF THE ECONOMY

No.	Car	H. P.	Passen-	Gasoline
3	Reo bus	16	10	\$16.00
4	Reo runabout	8	4	7.98 $\frac{1}{4}$
6	Compound	15	5	10.87 $\frac{1}{2}$
9	Wayne	20	5	12.40 $\frac{1}{2}$
8	Olds	8	4	10.35 $\frac{1}{4}$
7	Compound	15	4	10.34 $\frac{1}{4}$
2	Marmon	20	5	14.82 $\frac{1}{4}$

The total journey aggregated 682 miles, made up of round trips of 202, 300 and 180 miles, to Philadelphia, Albany and Southampton, respectively. The aggregate of \$14.53 car fare per passenger was, of course, badly beaten by the automobiles, whose average cost per passenger ran from \$2.93

## EASTERN MILLIONAIRES ARE SPEED MAD

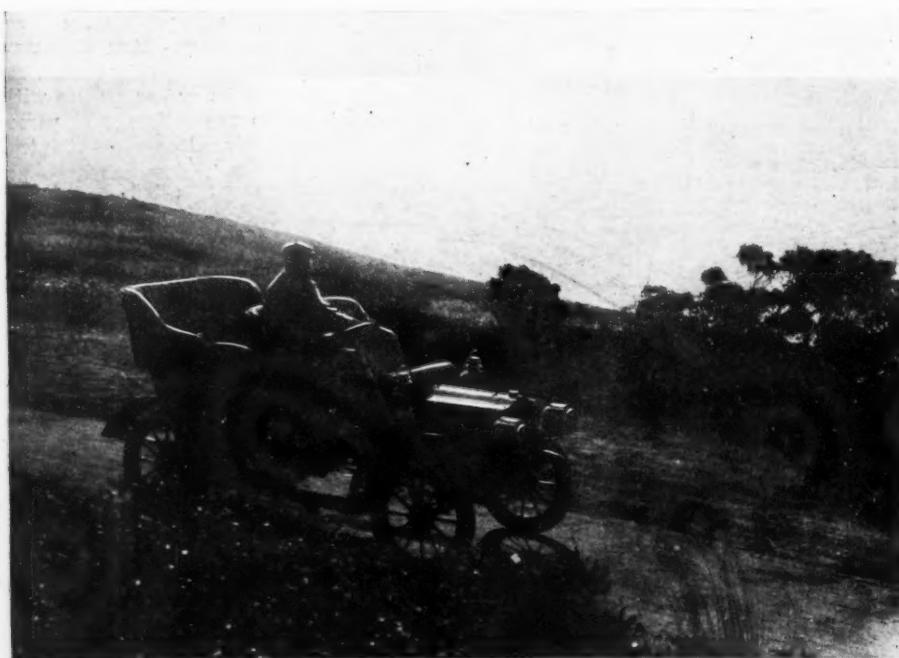
New York, Nov. 6—Senator Morgan's 2-miles-a-minute race at the Florida meet has set the racing world afame. The talk of the trade identified with the racing game is now all of great speed creations to be built to capture the star event of the annual tournament. Millionaire racing enthusiasts are already looking about for cars with high speed records. As was to

be expected, there was a jump for the 110-horsepower Fiat, which Lancia drove in the Vanderbilt race at an average rate of over 70 miles an hour for over 200 miles of the running. George W. Young, a broker, new to the racing game, has secured it. He has already engaged Harry W. Fletcher, who won the Vanderbilt 100-mile contest on the beach last year and

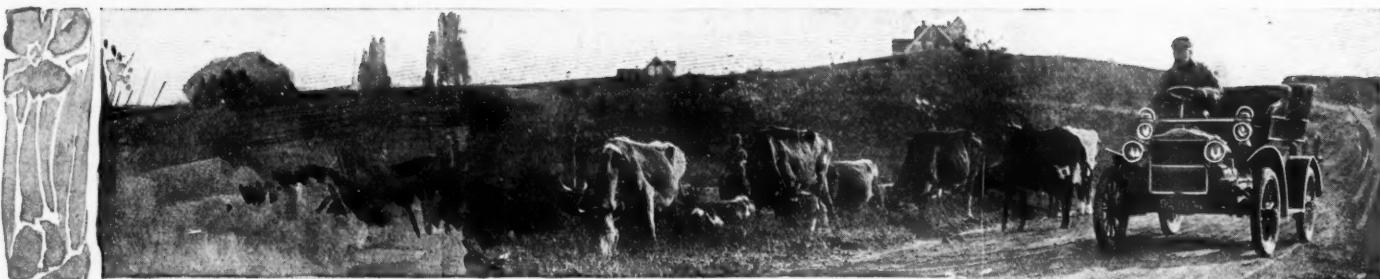
also scored world's road records in Cuba, to drive it in the Ormond-Daytona, the Palm Beach-Miami and the Cuban races.

Senator Morgan makes light of a cable from Havana printed in the Herald to-day, which hints at the possibility of the abandonment of the Cuban carnival unless a subscription of \$14,000 to defray expenses be forthcoming. As is well known, last year's race entailed a heavy loss, which was met personally by Senor Conill, president of the association, whose car won the Havana cup. The senator had a conference with Senor Conill on Saturday, at which the Cuban sportsman promised a personal subscription of \$2,000. Next year's race will be 200 miles, four times over the 50-mile stretch between Arroyo-Annas and San Christobal. The road will be oiled to a width of 15 feet. The grand stand is to be erected by outside speculators and will be commodious.

Senator Morgan had a conference with his advisers today, at which the programme for the Ormond-Daytona meet was finally determined. No change in the events already announced was made, but to the card were added two events open to amateurs under the A. A. A. definition—a 10-mile Corinthian championship and a 10-mile amateur handicap. The entry blanks will be issued early next week. The card, as finally made up, will consist of nineteen competitive events and time trials at a mile and a kilometer. The 2-mile-a-minute race, however, will also be run in the form of flying start time trials and will be starred as the feature event.



ON THE NEW YORK ECONOMY TEST RUN—ALONG THE HUDSON AT DUSK



to \$4.58 for the three different types of cars.

The results of the test are set forth in the annexed table. Though the committee proposes to do a lot more figuring and possibly some correcting, the figures given are substantially correct. In the table the

resented three classes of vehicles—the passenger bus, the runabout and the touring car. The test was well conceived and well carried out and will well serve as a basis for similar and more generally representative economy trials in the future.

The actual cost of fuel for the three different styles of vehicles competing—bus, runabout and touring car—shows that the average per mile, per passenger, for the first class was slightly less than 3-10 cent per mile, for the second exactly 3-10 cent and for the third 4-10 cent per mile. When it comes to a ten-passenger bus, traveling at slightly less than 3 cents per mile for gasoline and oil, and maintaining this average for 682 miles over various country and city roads, the anti-motorists had better get their pencils and paper out and see where they get off with their single or double horse outfits.

The prospective buyer of a runabout machine can find solace in such figures as \$8.25 for fuel and oil for carrying four



ECONOMY TEST CAR ON SOUTHAMPTON ROAD

passengers 682 miles. When dissected, these figures place the fuel cost per mile for the four passengers at 1½ cents, from which it can be deduced that the ordinary citizen in a large metropolis, who has to go 8 miles each morning to his business office and home as many at night, can do this at a daily outlay of 19 cents, having the privilege of carrying three of his friends with him for the same expense.

#### TEST TOLD IN FIGURES

Average	Oil	Total	Av. per Pas.	Av. Per Mile
\$1.60	\$3.38 ¾	\$29.30	\$2.93	\$0.0042
1.99 ¼	.25 ½	13.54	3.38 ½	.0049
2.17 ½	2.12	18.62 ½	3.72 ½	.0064
2.48	2.10	19.81 ½	3.96 ½	.0058
2.59	.42	15.86	3.96 ½	.0058
2.83 ½	2.13	17.18 ½	4.29 ½	.0062
2.96 ½	1.40	22.91 ½	4.58 ½	.0067

difference between the total cost and the total fuel charges will represent ferry charges for a total of six crossings added to the charges for mechanical adjustments and replacements and tire repairs.

Though the results are based only on the performances of seven cars, these cars rep-

#### PLAN TO EXTEND CHICAGO'S BOULEVARDS

Chicago, Nov. 7.—The windy city is already noted for its magnificent park system, but if the additional improvements now talked of are put on it will improve this system of boulevards until it will be without a peer. For some time a movement has been on foot to link the pleasure highways of the three divisions, but it was not until last week that an official estimate was received. A commission of experts, consisting of J. W. Cremin, F. D. P. Snelling, W. E. Casselman, Albert Schoenbeck and Robert H. Bulkley, reported to the board of local improvements that in its opinion it will cost \$8,000,000 to link the boulevards. It is figured that the damage to property and condemnation proceedings will amount to \$4,392,001, that a new bridge across the river at Rush street will cost \$1,500,000, while an equal sum will be required to cover the purchase of leaseholds, construction of a retaining wall along Central avenue, reconstruction of pavements, sewers, basins, lighting systems, etc.

The board will hold a public hearing early in December on the proposed condemnation, at which the whole subject of the boulevard link will be debated. The question of undertaking the improvement then will be taken under advisement by the commissioners.

The district to be assessed for the expense of the improvement is fixed by the experts as the territory extending from North avenue to Thirty-third street along the drive and in its immediate vicinity. The boundary on the south, the Thirty-

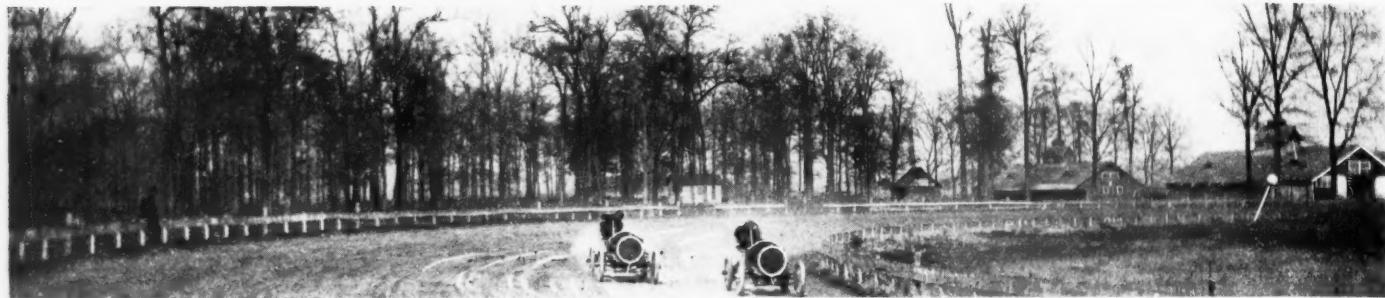
third street boulevard, furnishes an outlet for the entire south park system through Grand, Oakwood and Drexel boulevards, and for this reason the experts fixed this limit. The value of the land to be condemned between the river and Ohio street is placed at \$311,454, while that between the river and Randolph street is valued at \$2,242,116. The assessment for this on

the north side will be spread upon all lots and blocks lying between North avenue and the river, both sides of State street, and on Lake Michigan and will be 37½ per cent, or \$957,590, for the land alone. It will be borne by the property owners of this district. On the south side the assessment for the land value will be 62½ per cent, or \$1,595,980.



THE REO BUS, WINNER OF THE NEW YORK MOTOR CLUB'S ECONOMY TEST

# CLEMENS DOES REMARKABLE CENTURY



THE TWO NATIONAL CARS, WITH CLEMENS AND MERZ UP, ON THEIR NECK-AND-NECK STRUGGLE, AT THE SIXTY-SECOND MILE

INDIANAPOLIS, IND., Nov. 5.—To the National car, driven by Jap Clemens, belongs the honor of smashing to flinders the best authenticated record for 100 miles. It was no racing machine that performed this stunt—just a stock car stripped of some of the surplus weight, which made the century in 1 hour 53 minutes 21½ seconds, as against the mark of 1 hour 56 minutes 39 seconds credited to Guy Vaughn in his 1,000-mile drive on the Empire City track last June. This performance was made yesterday at the Fair Grounds in a competitive drive designed to put up a mark which would demonstrate thoroughly the capabilities of the automobile at going such a distance at top speed.

Those who saw the performance marveled at the regularity with which Clemens reeled off the miles. Beautifully handled by the veteran, the National ripped off mile after mile like a chronometer, never varying, with one or two exceptions, more than a minute at any stage after the first mile, the average for the century being 52.9 miles an hour. Naturally the first mile was the slowest, Clemens taking 1 minute 19½ seconds to make the oval. Then he settled down to work and the time sheets show him as having run with great regularity the rest of the distance. His slowest mile after the first was the eighty-fourth, which was done in 1 minute 14½ seconds, while the fastest was the ninety-eighth, which was done in 1 minute 5½ seconds.

Five cars started in the test—two Nationals, a Premier, a Marion and a Maxwell. Charles Merz, in the other National, took the lead at the start and cut out a merry clip. Clemens kept his eye on the lad and stayed within striking distance. Merz showed great skill and remained in front until the eighty-third mile, when the officials called him off to put on a new tire. This cost him 5 miles, but he gamely started again, but he had hardly gotten under way before the new tire slipped from the wheel and car and driver crashed into the fence. He was going 53 miles an hour at the time, but he luckily escaped injury.

Two of the others were distanced much earlier than this, Fred Tone, in a Marion, quitting at 13 miles; Frank Moore, in a Maxwell, lasted a little longer.

This left only Clemens and Ray McNamara, in a Premier, but the National man was never in danger. He was miles in front and coached by those who were pulling for him to do something in the record line, he carefully rated his car along with the sole object of putting up a century mark that would take a lot of beating. His engine was going along without a skip and there was every indication that he would be successful. Starting in on his last 5 miles, he did the ninety-sixth in 1 minute 6½ seconds. The next round he slipped back a bit and the watches showed 1 minute 8 seconds. Then he whooped 'er up and the result was the fastest round of the entire performance, the mile being done in 1 minute 5½ seconds. The ninety-ninth was in 1 minute 7½ seconds and the 100th in 1 minute 7¾ seconds, Clemens coming in on the bit, as the horsemen present expressed it.

Struggling far in the rear was McNamara, so far behind that it reminded a yachtsman in the stand of the first race sailed for the America's cup, when an English lord reported to the queen that the Yankee boat had won. "Who was second?" asked Victoria. "There is no second, your majesty," reported the courier. McNamara, though, did well and would have been in the limelight had it not been for Clemens' record feat. He did his century

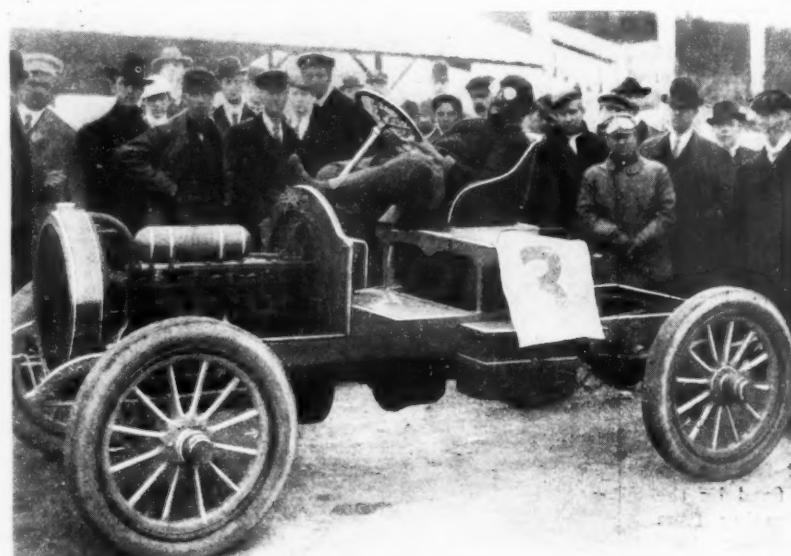
journey in 2 hours 15 minutes 31½ seconds. "That certainly was one of the smoothest performances I ever witnessed in the motor line," said a tradesman who was present at the trial. "There those two Nationals went along mile after mile, Merz leading by not more than 50 feet at any stage and often the two were running tire and tire. It was decidedly unfortunate that the tire incident occurred, otherwise one or the other would undoubtedly have clipped off several more minutes. With Merz put hors du combat in the eighty-third mile, Clemens was without a pacemaker just at a time when he needed it most. Whether or not Jap would have won is doubtful, for the youngster certainly showed great skill in handling his National. On the other hand, Clemens displayed discretion in the handling of his car, and I never saw such excellent judgment of speed shown when in an affair of this kind."

"The performance of the Premier car in the 100-mile contest was especially praiseworthy, despite the fact that it finished second to the National. The Premier in this event is only a runabout—a 16-horsepower car that ran with remarkable regularity. So far as can be ascertained the engine went the full century without a skip or a break of any sort. While the 40-horsepower National gathered in a world's record for 100 miles, the Premier people file a claim for a record themselves, asserting that 2 hours 15 minutes 31½ seconds, the time made by their runabout,

is a mark never before reached by a car under 20 horsepower.

"The average speed of Clemens' National was 1 minute 8½ seconds per mile and you will notice, by looking at the sheet, that two of the miles were much slower—one nearly 1 minute 20 seconds and the other just inside 1 minute 15 seconds, so you see he had to make up quite a bit of lost ground to get the average he did."

"The National that did the trick was a 40-horsepower machine and, the track—an ordinary oval used for horse racing. Going nearly a mile a minute, you can appreciate how well the car ran when you consider the turns which



JAP CLEMENS IN THE NATIONAL JUST AFTER THE FINISH

bobbed up just about the time Clemens would get to going in the straight. I consider his performance one of the best in the record-breaking line we have had this year. Clemens is comparatively unknown as a driver. He was once prominent in the cycle trade and has always been an athlete, being especially expert as a football and polo player. Merz is only 19 years of age."

#### SANCTIONS TO BE SCARCE

New York, Nov. 6.—At a meeting of the executive committee of the National Association of Automobile Manufacturers, last Thursday, it was decided to limit the sanctions for local shows to those cities in which shows were held last year, and to make it only on the condition that the proceeds of such shows must go to organizations of local dealers. Such local organizations must admit all reputable dealers who have been such for at least 1 year upon the same basis as all other members, and the dealers must not call upon the manufacturers they represent for financial assistance in the conduct of their exhibits.

#### C. G. DINSMORE DEAD

New York, Nov. 8.—Special telegram—Clarence Gray Dinsmore, third vice-president of the Automobile Club of America, died today of pneumonia after a brief illness. Mr. Dinsmore was also foreign representative of the A. C. A. and an enthusiastic follower of international road racing, Jenatzy driving his Mercedes in the Bennett race in Ireland.

#### MORGAN GOES SOUTH

New York, Nov. 8.—Special telegram—W. J. Morgan will leave New York tonight for Florida to arrange for the automobile exhibit at the Jacksonville pure food and industrial exposition, January 4 to 18, and will also go to Daytona for the purpose of putting up of new timing wires on the Ormond-Daytona beach.

## SHOW IN FATHERLAND

### One Hundred and Fifty-Four Firms Occupy Spaces in Frankfort Motor Car Exhibition

Berlin, Oct. 26.—The Frankfort motor show is now on, 154 firms occupying spaces. Among the most prominent is the Daimler company, with machines ranging from racing cars to vans, including an omnibus carrying thirty-two persons and 1 and 2-ton delivery vans. The Neue Automobil-Gesellschaft, familiarly known as the N. A. G., and a sister company to the British General Electric Co., shows, in addition to 10 and 20-horsepower cars, a couple of heavy vehicles and an army tractor with trailer. The features of the N. A. G. line are the round form of radiator and few hand and foot levers. The Durkoop company has everything from a small, light car to a giant van. The Gernsbach omnibus, which starred in the recent van and omnibus trials of the Automobile Club of Germany, is shown by the Suddeutsche Automobil-fabrik of Gaggenau. This concern is using a lighter superstructure, and the 16-horsepower phaeton has a detachable roof, which may be replaced with a summer one. It also has a light model using friction-drive. The Schiebler people of Aix-la-Chappelle, have a motor omnibus.

Exhibitors, from outside Germany include the German De Dion-Bouton Co., the Turin Itala Co., the Societe Anonyme des Ateliers Germain-Monceaux sur Sambre, and the Puegeot concern.

Tires are well represented, the Simplex especially being in the limelight with the tire that can be mounted instantaneously on a patent double felloe. The Continental people are in line as usual, as are the German Rubber Tire Industry, Louis Peters, Albert Calmon & Co., and Dunlop Tire

Co., who all have magnificent displays.

The Argus Motor Co., of Berlin, displays a chassis with chrome-nickel steel axles and the 1906 models show a new spring suspension, the upper back springs consisting of laterally-curved half-springs set in the frame ends.

#### COLUMBIA CHANGES

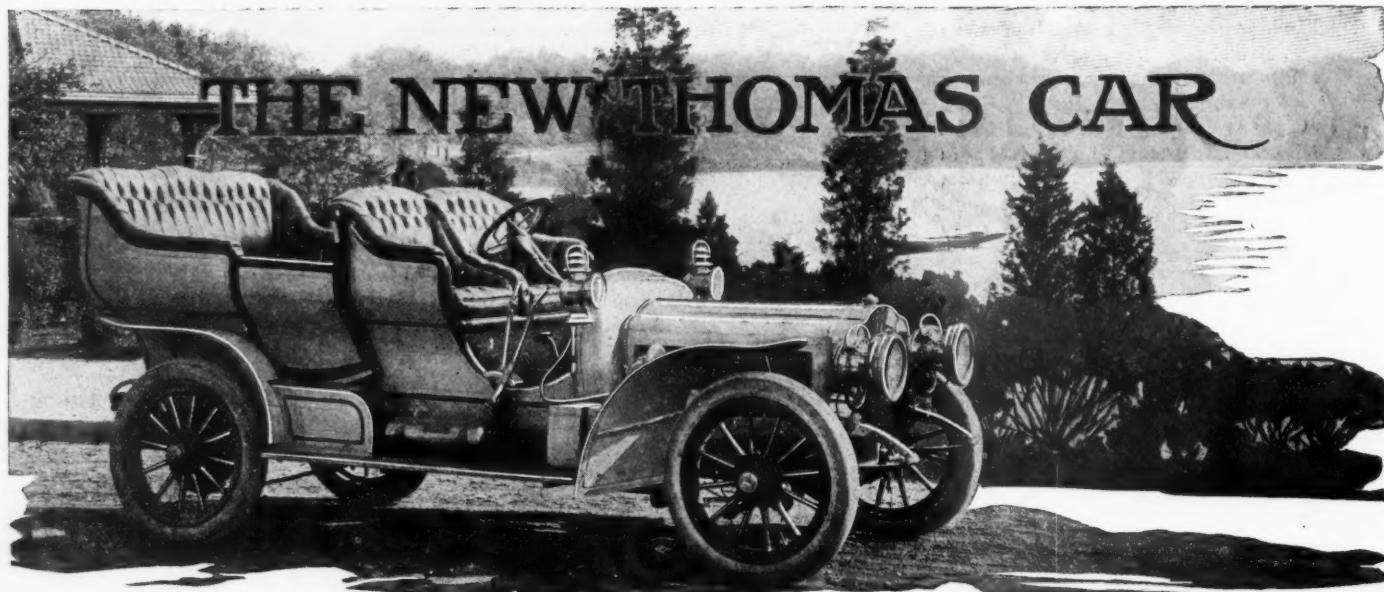
Hartford, Conn., Nov. 6.—Many radical changes will be found on the four-cylinder 1906 Columbia. The ignition is make-and-break with magneto current. The cylinders are cast in pairs, but appear to be individual, the middle section being of aluminum. Lubrication of the crankshaft bearings is by means of a rotary gear pump, the oil falling to a reservoir below the crankcase. The supply is sufficient for 400 miles of travel. The drive is by a telescoped shaft. The forward axle is I-beam construction and the rear axle set consists of a fixed tube containing the live axle, the weight of the car being borne by the axle housing. While a car of medium power was designed and while the rating is said to be placed at 24 horsepower, tests have put the power higher.

#### OLDSMOBILE REUNION

New York, Nov. 8.—Special telegram—The reunion of Oldsmobilists in celebration of the fifth anniversary of the introduction of the little curved front runabouts in this city was the election day event in motordom. The idea, which was the conception of Roy D. Chapin, of the Olds Motor Works, and General Cutting, the company's local representative, made a big hit and will probably be a forerunner of similar reunions of drivers of Oldsmobiles and perhaps other makes in this city and throughout the country. Around noon time the avenues and streets in the neighborhood in upper Broadway swarmed with curved front runabouts and other cars of the genus Olds. When they were all drawn up in a double-line on Fifty-first street they reached from Broadway to Eighth avenue.

## NEW 100-MILE FIGURES MADE BY CLEMENS IN A NATIONAL

Miles	Elapsed Time	Time H. M. S.	Single Miles Min.	Miles	Elapsed Time	Time H. M. S.	Single Miles Min.	Miles	Elapsed Time	Time H. M. S.	Single Miles Min.
1.	1:19 2-5	1:19 2-5		35.	3:48 2-5	1:08 2-5		69.	1:18:25 1-5	1:08	
2.	2:28	1:08 3-5		36.	40:57 4-5	1:00 2-5		70.	1:19:33 2-5	1:08 1-5	
3.		3:36 2-5	1:08 2-5	37.	42:05	1:07 1-5		71.	1:20:41 1-5	1:07 4-5	
4.		4:44 1-5	1:07 4-5	38.	43:12 4-5	1:07 4-5		72.	1:21:49	1:07 4-5	
5.		5:52 1-5	1:08	39.	44:21	1:08 1-5		73.	1:22:57 1-5	1:08 1-5	
6.		7:00	1:07 4-5	40.	45:28 3-5	1:07 3-5		74.	1:24:05	1:07 4-5	
7.		8:08 1-5	1:08 1-5	41.	46:36 2-5	1:07 4-5		75.	1:25:13 1-5	1:08 1-5	
8.		9:16 2-5	1:08 1-5	42.	47:44 1-5	1:07 4-5		76.	1:26:20	1:06 4-5	
9.		10:25	1:07 3-5	43.	48:52 1-5	1:08		77.	1:27:26 4-5	1:06 4-5	
10.		11:31 3-5	1:07 3-5	44.	50:01	1:08 4-5		78.	1:28:33 2-5	1:06 3-5	
11.		12:39 1-5	1:07 3-5	45.	51:08 3-5	1:07 3-5		79.	1:29:39 4-5	1:06 2-5	
12.		13:46 2-5	1:07 1-5	46.	52:16 4-5	1:08 1-5		80.	1:30:46 1-5	1:06 2-5	
13.		14:53 1-5	1:08 1-5	47.	53:25 1-5	1:08 2-5		81.	1:31:52 4-5	1:06 3-5	
14.		16:01 2-5	1:06 4-5	48.	54:33 1-5	1:08		82.	1:33:00	1:07 1-5	
15.		17:08 4-5	1:07 2-5	49.	55:40 4-5	1:07 3-5		83.	1:34:07 3-5	1:07 3-5	
16.		18:16 3-5	1:07 4-5	50.	56:48 3-5	1:07 4-5		84.	1:35:22 1-5	1:14 3-5	
17.		19:25	1:08 2-5	51.	57:56 2-5	1:07 4-5		85.	1:36:31	1:08 4-5	
18.		20:32 3-5	1:07 3-5	52.	59:04 3-5	1:08 1-5		86.	1:37:39	1:08	
19.		21:40 1-5	1:07 3-5	53.	1:00:12 4-5	1:08 1-5		87.	1:38:48 1-5	1:09 1-5	
20.		22:48 2-5	1:08 1-5	54.	1:01:21	1:08 1-5		88.	1:39:58 1-5	1:10	
21.		23:56 1-5	1:07 4-5	55.	1:02:29 3-5	1:08 3-5		89.	1:41:07	1:08 4-5	
22.		25:04	1:07 4-5	56.	1:03:38 3-5	1:09		90.	1:42:14	1:07	
23.		26:12 2-5	1:08 2-5	57.	1:04:47 1-5	1:08 3-5		91.	1:43:21	1:07	
24.		27:20 4-5	1:08 2-5	58.	1:05:56	1:08 4-5		92.	1:44:28	1:07	
25.		28:28 2-5	1:07 3-5	59.	1:07:03 4-5	1:07 4-5		93.	1:45:34 3-5	1:06 3-5	
26.		29:36 2-5	1:08	60.	1:08:12 2-5	1:08 3-5		94.	1:46:41	1:06 2-5	
27.		30:44 3-5	1:08 1-5	61.	1:09:21	1:08 3-5		95.	1:47:47 4-5	1:06 4-5	
28.		31:52 1-5	1:08 3-5	62.	1:10:29 2-5	1:08 2-5		96.	1:48:54 1-5	1:06 2-5	
29.		33:00	1:07 4-5	63.	1:11:37 2-5	1:08		97.	1:50:02 1-5	1:08	
30.		34:08	1:08	64.	1:12:45	1:07 3-5		98.	1:51:07 2-5	1:06 1-5	
31.		35:15 4-5	1:07 4-5	65.	1:13:53 1-5	1:08 1-5		99.	1:52:14 2-5	1:07 1-5	
32.		36:23 4-5	1:08	66.	1:15:01 1-5	1:08		100.	1:53:21 4-5	1:07 2-5	
33.		37:31 4-5	1:08	67.	1:16:09	1:07 4-5					
34.		38:40	1:08 1-5	68.	1:17:17 1-5	1:08 1-5					



THE Thomas Flyer for next year is a 50-horsepower machine which shows many radical changes over the present Thomas car. The E. R. Thomas Motor Co. has spared nothing in making the construction of the present car high grade. By way of changes it can be noted that the atmospheric inlet valves have been replaced by mechanically operated valves, and that the inlets and exhausts are placed on opposite sides of the cylinders. Instead of the cone clutch there is one of the disk type, four forward speeds are used in the gear case, the wheel base has been increased, from 104 and 110 inches as used at present, to 118 inches, very long springs have been added and four brakes fitted. The unique style of Thomas bodies is retained, but the top of the back seat is lower, eliminating the heavy appearance associated with the very high back. The square corner effect is replaced by easy corner curves. Chain drive, hollow metal dash, ample carrying compartments, and most of the other features are retained.

The sub frame, so common on this year's machines, has been dropped, the motor now being carried direct on the main frame side pieces, which are offset in front for this purpose as well as to increase the turning angle. These side pieces are of deep section and taper considerably toward the rear, but not so much to the front. In cross bracing channel sections are used, each being riveted and supported by large gusset plates, also riveted in place. Where the side pieces are offset they are reinforced by heavy channel pieces.

Instead of using tubular axles, the drop forge I-beam type are now employed. These are made of steel and have been treated for this purpose in order to stand shocks, stresses and strains. The rear axle is one piece, including the spring seats, in this way eliminating the use of brazed spring seats. The knuckle forgings are

machine tapered, with large fillets, and are attached to the I-beam yokes by a hardened and ground pin. All wearing parts are fitted with hardened steel bushings. The road wheels are made to take 34 by 4½-inch tires and each revolves on two races of Hess-Bright ball bearings. The weight of the car is approximately 3,000 pounds.

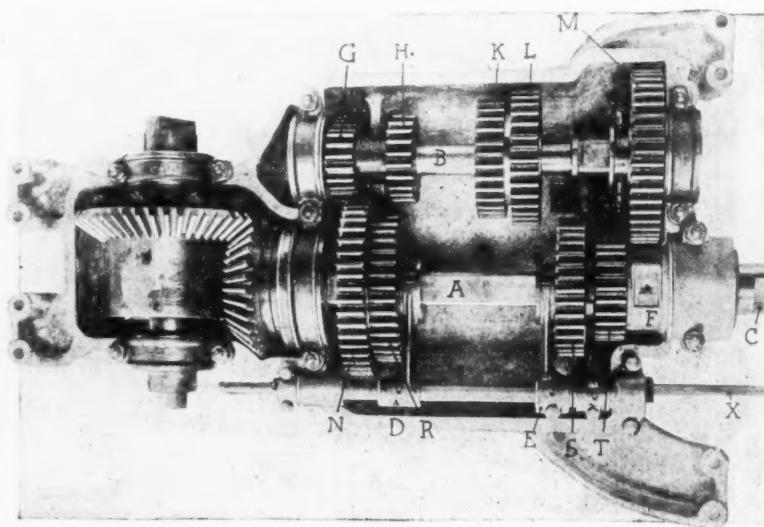
In the construction of the motor, each cylinder is made in a separate casting, with such parts as the inlet and exhaust valve ports, cylinder heads, and water jackets forming an integral casting. All valves are made interchangeable and are placed in the bottom of their respective ports, the method of removal being through openings in the valve port heads. The inspection caps over these ports are ground to fit and are secured by a cross yoke, held in place by a setscrew, the loosening of the screw and giving the yoke a half turn being sufficient to lift the cover plate out. Both camshafts are encased within the crank chamber and are driven by external gears of the combination type, having very wide faces and protected by an aluminum shield. The crankshaft is a drop forging, ground to a finish all over and runs in long plain bearings fitted with chain oilers. Each oil pit beneath the crank-shaft bearings carries a supply sufficient

for 750 miles. The cylinders have a bore and stroke of 5½ inches, giving the rated power at 1,000 revolutions. Each piston is ground and the five piston rings are ground to 1-10,000 inch. The wrist pin is hardened steel and ground. On the pistons are oil grooves filled by the oil admitted through the cylinder walls, one oil duct from the mechanical oiler to each piston. Forged steel connecting rods are supplied.

The cooling facilities have been increased by adding practically a third to the radiating surface and increasing the service of the water pump threefold. Little change has been made in the ignition system. It is practically the same as that used for the last 2 years, with the single unit coil and jump spark system and with either dry cells or storage batteries. Provision has been made, however, for attaching any of the recognized magnetos, which can be directly attached to the motor and gear driven. The commutator has been improved, but, as was the case this year, will be located on the dash and is gear driven. Hitherto the wires have been gathered about the commutator, but now they are removed from sight.

The carburetor is of the automatic type and is manipulated from the top of the steering gear, as is also the lever for advancing and retarding the spark. It is directly connected to the clutch pedal with the independent throttle, which acts as a governor when either the foot or emergency brake is used. It is provided with means for taking either hot or cold air.

A mechanically operated oiler is located in the dash. The tank is of liberal size and has six sight feeds, four of them leading directly to the cylinders and two to the crankcase. The oil is delivered through the medium of individual pumps. In addition to supplying oil to the crankcase by the pump system an in-



FOUR-SPEED GEAR SET OF THE 1906 THOMAS

dividual oil cup is also supplied, insuring a quantity of oil in the case. The lubrication there is by the customary splash system. In charging the case with oil two pet cocks are located in the bottom of the crank case to indicate the proper level of oil when the case is filled.

For the Thomas car next year the disc clutch has been adopted. It is a metal to metal, three-plate device. The center plate is of manganese bronze and the outer plates are of gray iron. The manganese plate, being a transmitting member, is provided with a series of holes filled with cork cushions. The push pedal, with an easy pressure, releases the clutch. The clutch is provided with ball thrust bearings and adjusting screws for taking up wear. To prevent the transmission shaft from running when the clutch is disengaged a special thrust is provided, causing the shaft to come to a standstill, enabling the operator to shift the gears easily.

In having four forward speeds in the sliding gear case, a feature common in most of the high class European machines is added. The case is carried on two of the frame cross pieces, two short curved arms on the front of the bottom part of the case supporting the front part and a pair of arms close together carrying the rear end. Enclosing of the differential gears in the rear end of the case gives that part a narrow formation, necessitating the arms being close together. The use of Hess-Bright bearings throughout the gearcase and jack-shaft, with the exception of the main bearing marked F, is a leading feature. Changes in speed are gained on the selective principle, two shifting units moved respectively through the shifting arms D and E, eliminating the necessity of passing through intermediate gears when changing from a low to high speed or vice versa. One lever at the right, working in a double-slotted quadrant, is used in making speed changes. On the direct drive the shaft C from the clutch is connected with the squared main shaft A by moving forward the gear, S, as shown in the illustration, so that dental face

teeth on its forward side interlock with others on the rear side of gear T. The gear M on the counter shaft being moved forward at the same time is taken out of mesh with T and the counter shaft is left stationary on direct drive. For second speed ahead gear S is moved back, meshing with L, and at the same time M moves into place, meshing with T. For third and fourth forward speeds the unit comprising gears N and R is moved so that R meshes with K for the third speed and N with H for the fourth. In reversing gears N and G are connected by an idler. The shifting arm D is mounted on the shaft X, which is connected with the gear shifting lever, and E is on a sleeve on the shaft and is similarly connected with the shifting lever. All gears are interlocked with the clutch, the clutch being thrown out before a speed can be changed. In this year's cars all gears have a  $\frac{7}{8}$ -inch width, but in the 1906 model this has been increased to  $1\frac{1}{4}$  inches. They are all drop forged and of large diameter. All of them are made detachable, so should a break ensue or any change be necessary replacement may be made speedily. Rapid inspection of the gears is made possible by the use of a large inspection cap in the top part of the case. Final drive is through double side chains, Whitney roller chains being used. The sprockets are made with the hub part and the ring piece carrying the teeth separate, being fastened together by bolts, the object of the construction being to facilitate the changing of speed ratios without interfering with the adjustments of the jackshaft bearings.

As the differential is in conjunction with the transmission case, this also has been improved by the addition of another set of

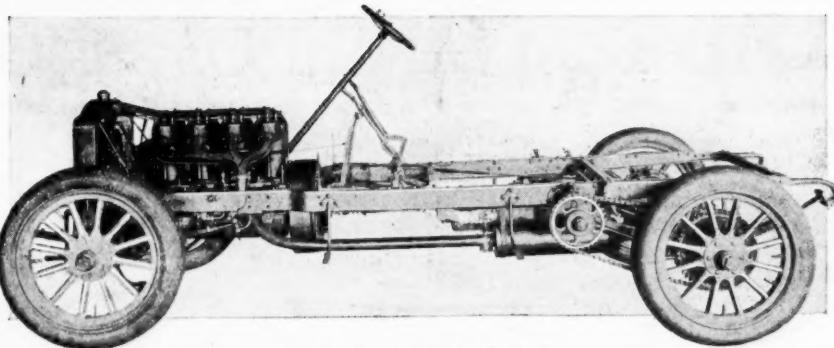
pinions, increasing the strength. The brakes are four in number, two of large dimensions on each rear wheel. Two of the brakes are of the internal expanding type and are operated by pedal and the other two are external, operated by the emergency lever, but both brakes are connected in such a manner that with one movement of the emergency lever all brakes are applied,

the clutch is disengaged and the motor throttled, but the foot brake is of such proportions and strength that by its use alone the car may be held on heavy grades.

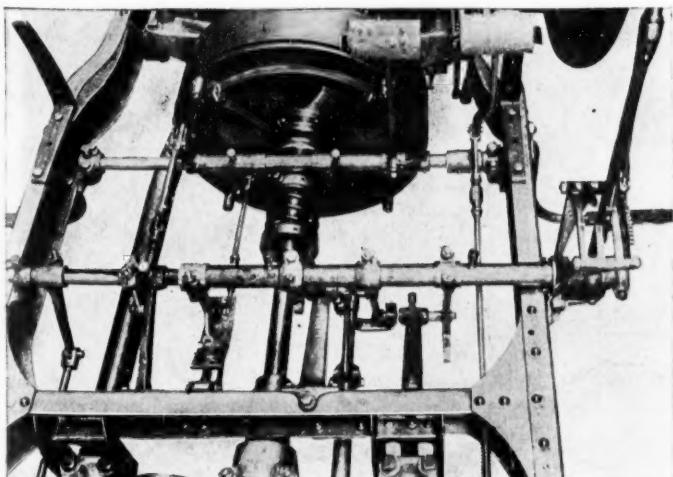
The hill-climbing safety device is retained and the strength of its construction increased. This device consists of ratchets on the outside of the rear axles, into which a dog slips by the working of a small lever at the right side of the operator. It can be engaged or disengaged while the car is traveling at any speed.

In body design the dash, made of aluminum, is shaped to conform with the hood and lockers are situated on each side for carrying small tools. Natural wood is used in the interior finish. The present side tonneau lines are retained. The rear seat is wider than before and two collapsible revolving seats, which can be stored under the cushion in a compartment under the rear seats, are added, enabling five people to ride comfortably in the back half of the car. Three designs of body are made. The touring car, limousine and the landauet. The last two accommodate the same number of people as the touring car and their upper lines conform with the lower half of the body. The top of the touring car body folds back to the level of the rear seats, the lining of the top folding in, just giving an unobstructed view to the rear.

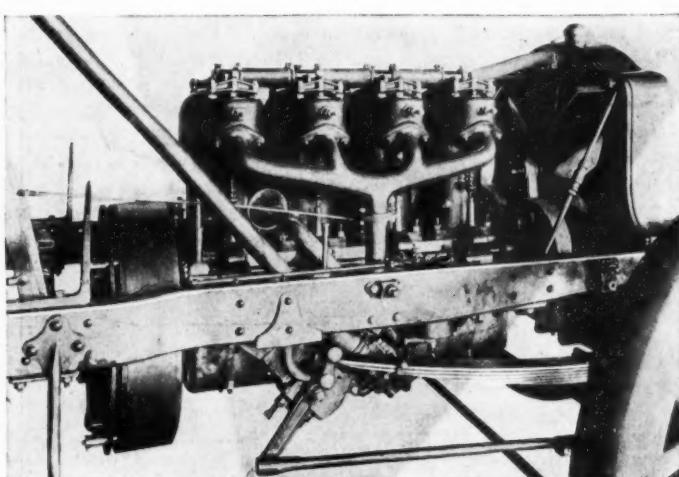
All styles are finished in standard colors, according to the tastes of the purchasers, running gears and bodies being finished in the same or different colors. Upholstering. The front seats are individual and, like the tonneau ones, are heavily upholstered. Extra tonneau accommodation is given for two by revolving side seats, neither of which interfere when entering or leaving.



THE 1906 THOMAS CHASSIS

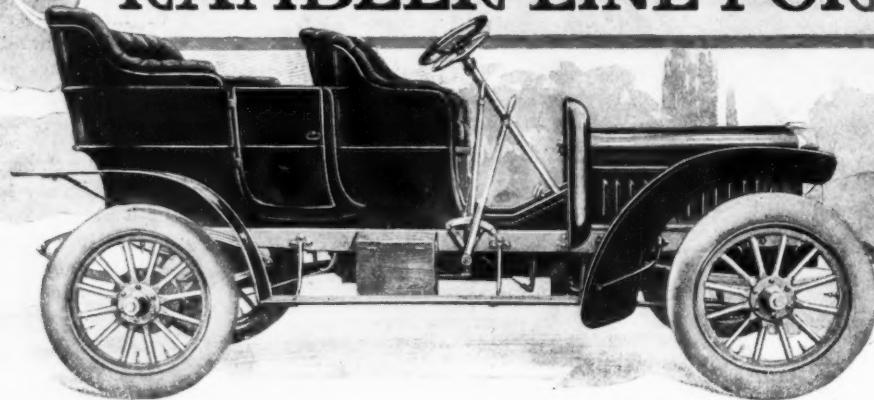


CLUTCH AND OPERATING RODS IN THOMAS CAR



INLET SIDE THOMAS 50-HORSEPOWER MOTOR

# RAMBLER LINE FOR 1906



THE 20-25-HORSEPOWER FOUR-CYLINDER 1906 RAMBLER CAR

ONE OF THE interesting trade announcements is that three 1906 Rambler models will have vertical four-cylinder motors with transmission through a sliding gear set. Thomas B. Jeffery & Co. have previously always been content with machines carrying horizontal motors beneath the body, driving through planetary gear sets.

The Rambler menu for next year embraces seven models, two used this season that are being carried over and five new vehicles. Those carried over are the surreys, types one and two, the former an 18-horsepower side-entrance five-passenger car, with a two-cylinder opposed motor, and driving through a two-speed and reverse transmission, with single chain drive, and the latter a 20-horsepower motor, of similar design, with drive from the transmission shaft to a counter shaft by single chain and from the counter shaft by side chains to sprockets on the rear hubs. Both of these models have been retained without change except a few details in the transmission gears and the use of an aluminum crankcase in the larger model.

Of the new machines, surrey type three is fashioned largely after the lines of types one and two except that the wheel base is made 100 inches. The power plant is an 20-horsepower two-cylinder opposed motor, placed lengthwise beneath the body with the planetary gear shaft axially in line and final drive through single chain to a sprocket on the spur gear differential. The Rambler runabout for the coming season will be a two-cylinder vehicle rated at 10-12 horsepower with standard motor and transmission parts and single chain drive.

It is natural to expect that the three four-cylinder cars will prove the interesting models. They are officially known as types fourteen, fifteen and sixteen, the first a 20-25 horsepower light touring car with cylinders having a bore and stroke of 4 and  $4\frac{1}{2}$  inches, respectively, and the last two are fitted with motors with 5 by  $5\frac{1}{2}$ -inch cylinder measurements and rated at 30-35 horsepower, one being a five-passenger side entrance touring car and the other is a limousine, with

chassis identical with the touring car, and a body design fashioned on the most approved lines and finished in keeping with its design. One feature of type fourteen is shaft drive, while double chain drive is used in types fifteen and sixteen.

In keeping with Rambler construction during the present season the use of ball bearings in the road wheels is continued, the bearing construction not varying from the standard lines. In the front wheels the steel cone A threads onto the end of the spindle B and between this and the steel cup C, of hook-like design, the balls are retained. For adjusting the balls, the nut F within the hub cap is adjusted and between this and the bearing cone is a washer E, anchored against rotation. The bearing cup C rests against the hub part D of the wheel. The weight of the machine is carried in the steering knuckles by the balls G retained between the horizontal rings H, the lower ring resting on the hub K of the steering knuckle spindle and the other connected with the jaw part L of the knuckles.

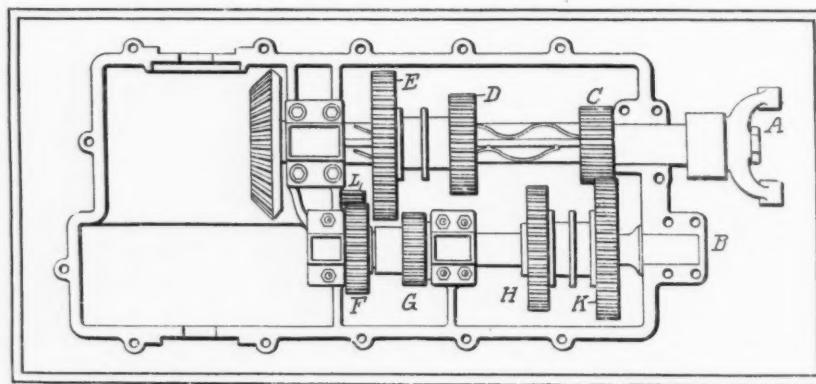
Rambler radiators have always been a conspicuous feature—in fact, a distinguishing mark on the machines—and the vertical flat tube type introduced on the four-cylinder machines is also unique. Flat brass tubes of approximately 4 inches in depth but very narrow and equal to the height of the radiator in length are placed side by side and connected at the top and bottom with water tanks. The tubes are soldered in place and are held apart throughout their length by cross bridges. For assisting in cooling a fan is carried back of the radiator, being belt driven. Conspicuous in connection with the fan

must be noted the stamping of the blades out of one piece of metal. The fan blades are riveted to a metal hub and carried to a metal rim, which protects the outer ends of the blades and retains them in position.

In main frame construction in the 30-35 horsepower car the use of pressed channel steel parts throughout is in keeping with modern practice. The side pieces have a depth of  $4\frac{1}{2}$  inches in the center, tapering to  $1\frac{1}{2}$  inches at the front end and 3 inches at the rear end, are narrowed alongside of the motor, and in order to permit of a three-point suspension of both the motor and gearcase a few differences in the disposition of the cross pieces is found. Where the side pieces narrow is a pair of deeply dropped channel pieces placed back to back and on these rests the back end of the motor. Nearer the front of the frame are two motor support braces, running from the side pieces to a cross piece. These braces have a long taper union with the side pieces, to which they are riveted, and carry the two arms on the front end of the motor, completing the three-point suspension system. Each of the braces is riveted to the cross piece near its center. For the transmission support two cross pieces are used, one furnishing a single broad support for the front end of the gear box and the other carrying its two rear corners.

Owing to the use of full elliptic spring in the rear, and having the same pivoted on top, the frame side pieces are slotted at the rear ends, through which passes the rod to which the springs are pivoted. The rod is made rigid with the frame by bearing blocks resting on the bottom of the channel on which the spring rod rests, both being retained by clips. The semi-elliptic front springs are bolted to forged spring hangers, the latter being long and having a shoulder abutting against the front cross piece of the frame. At the rear ends the springs are attached in the usual manner. Both sets are 40 inches in length and are clipped to axle seatings brazed in position.

In the 20-25-horsepower machine slight

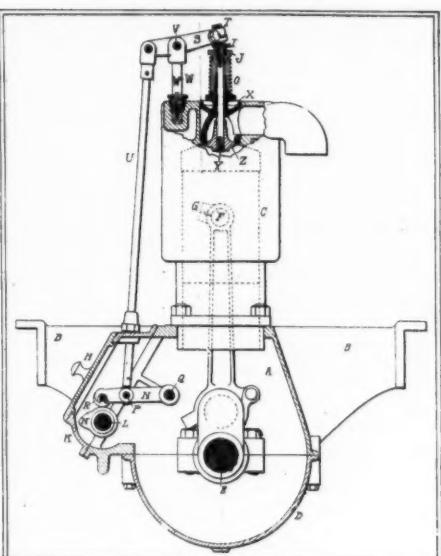


TRANSMISSION SET OF THE FOUR-CYLINDER 30-35-HORSEPOWER RAMBLER

differences in frame construction are used because of the shaft drive. A sub-frame is used which is fastened in front and rear to cross pieces. It is on the same level as the side pieces of the main frame, but the cross pieces within it are dropped to give a low center of gravity. Three point suspension of the motor and gearcase are features here also. Front axles in both models are centrally dropped and made from tubing, with a 5-16 inch wall in the larger car and  $\frac{1}{4}$ -inch in the smaller one. To the tube ends are brazed the jaw type steering knuckles. Thirty-two by  $3\frac{1}{2}$ -inch tires are used on the small car and 34 by 4-inch on the larger model.

The motors of the two machines are practically alike, except as to size. The four cylinders are separate castings, with the valves placed side by side in the heads, the use of valve ports thereby being eliminated. The valves are operated by overhead valve levers of walking beam pattern and similar ones within the crankcase in connection with the camshaft. Accessibility in the way of removing the valves or the camshaft and also in the examination of the crankshaft bearings and connecting rods, has been planned. The use of special nickel babbitt in all motor bearings, with grooves for distribution of lubricant, is noticeable.

The crankshaft is a three-bearing drop forging ground to finish, and has hand scraped bearings. The cylinders are ground to a fit, assembled, and then put on a testing stand, where they are run by a steam power and polished to a mirror finish by the use of crocus and oil. Pistons of the straight side and flat top style are used, each carrying three sets of double compression rings, two above the piston pin and one beneath. On the bottom part are four oil grooves for catching the splash. The connecting rods, of I-section drop forgings, are split at the top so they can be clamped on the hollow piston pin. The pin has its bearings in the piston journals and is fitted with two oil holes in each journal, so that the oil enters the ends of the pin and flows toward the center into the bearing. The pin is held from end movement by spring ring in a groove



END ELEVATION FOUR-CYLINDER MOTOR

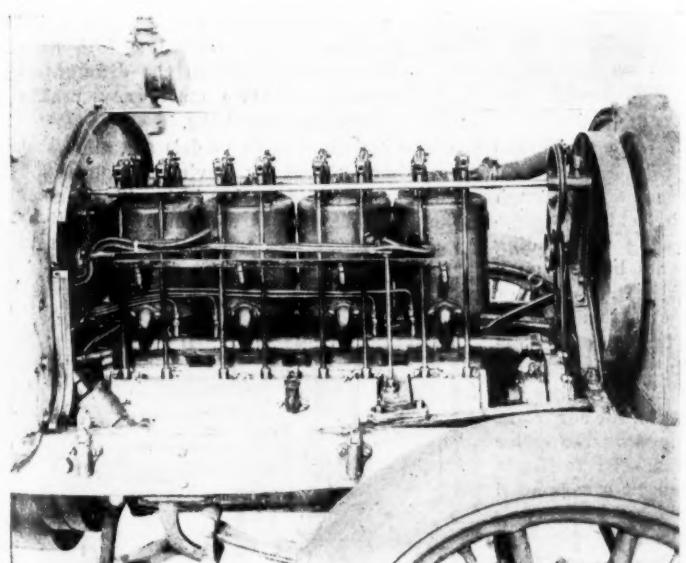
in the piston. To do this the end of the piston journal is cup shaped and into this is sprung a steel ring, which in case the connecting rod loosened on the pin the ring would prevent the pin from scratching the cylinder walls. The lower end of the connecting rod has a hinged cap secured at the loose side by nut and spring lock nut, the top part of the nut being coned to receive the cone-shaped split lock nut.

In the end section of the motor the general construction of the cylinder and crankcase and the method of actuating the valves may be studied. The top part of the crankcase A is an aluminum casting supported on the main frame through the arms B, each resting on the engine support braces. The base D serves only as an oil basin, the three crankshaft bearings being carried at the top part of the case. On the right side of the case are inspection plates H, which when removed disclose the camshaft and valve actuating parts, as well as the crankshaft and connecting rods. The arms B on the case being between the first and second cylinders, two inspection plates suffice, one small one at

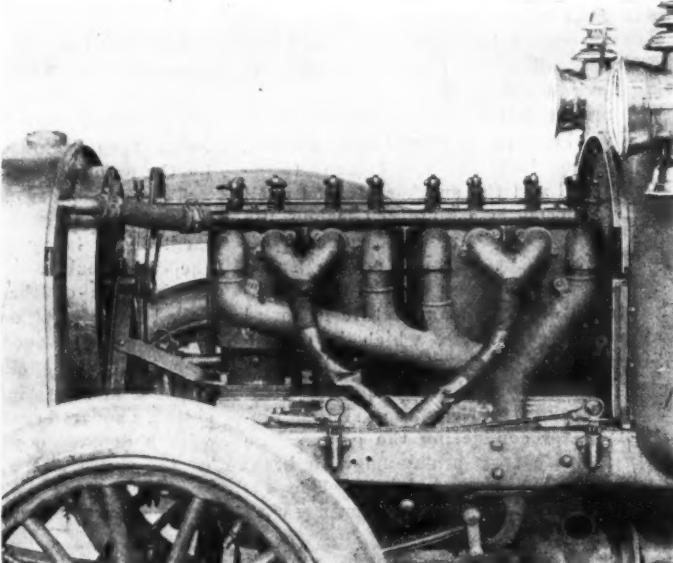
the front for examining the first cylinder part and a long one behind it for the parts of the three rear cylinders. The valves in the cylinder heads are placed so that the inlets in the two front cylinders are adjacent and the same position is used in the rear cylinders in order to facilitate the inlet piping. The valve cages X screw into the cylinder heads, the opening in the head being ground for tight fit. The valve heads Z are beveled to 45 degrees and have the steel stems Y screwed in place and finally riveted. By having the valve cage made with a long sleeve on top for carrying the valve stem the latter is protected throughout its length, and surrounding it is the valve spring O resting on a flange on the stem sleeve and retained at the top by a nut J secured by a locknut I on the valve stem.

Valve movement starts from the cam-shaft L placed in a separate compartment, well removed from the crankshaft, so that adjustments can be made with the connecting rods without the cam-shaft and its parts interfering. On the shaft are the integral double cams M, the inlet and exhaust for each cylinder being in one piece and pinned in place. The cam lever N is pivoted at its inner end at Q, the opposite end carries the steel wheel R, against which the cams operate, and midway of the ends is a third steel roller P on which rests the lower end of the rod U, passing to the top of the motor, where it is pivoted to the outer end of the valve lever S. This lever S is pivoted at V to the support W, screwed into the cylinder head, and in its other end receives the part T for pushing the valve stem. Peculiar in connection with the part T is that the end resting on the valve is rounded, so that when the lever S forces the valve down the action of the rounded end is practically the same as if a roller were used. By having T screwed in place the slightest adjustments are easily made, there being a slot in the head for receiving a screwdriver. Lowering the piece T increases and raising it lessens the valve lift.

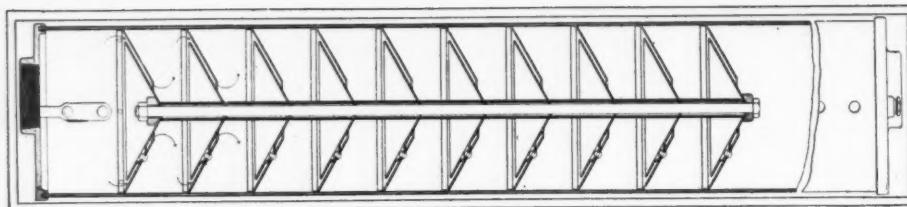
To remove either the inlet or exhaust valves, the pivot bolt V, retained by a cotter pin, is removed and the valve lever



LEFT SIDE FOUR-CYLINDER 30-35-HORSEPOWER RAMBLER MOTOR



RIGHT SIDE FOUR-CYLINDER 30-35-HORSEPOWER RAMBLER MOTOR



DETAIL OF RAMBLER 1906 MUFFLER

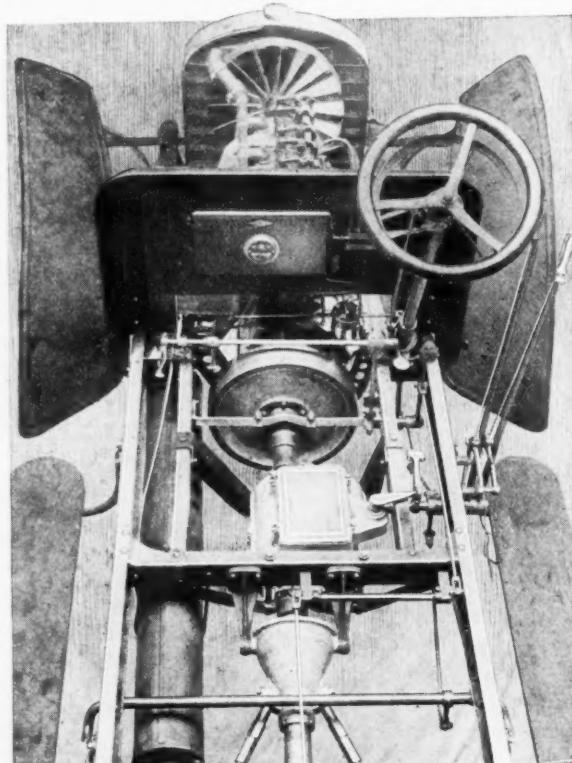
S is lifted out of position and the valve cage, which carries a hexagonal nut, is unscrewed, when both valve and cage may be lifted. In removing the valve from the cage the locknut and nut J are taken off. Should it be necessary to remove the camshaft the entire camshaft casing K may be removed by taking off a few nuts before removing it.

In the ignition scheme Rambler-made spark plugs are placed angularly in the sides of the cylinder heads, below the inlet valves, and the electric current is supplied from storage battery, supplemented by dry cells. The circuit connects with a coil on the dash and with a commutator carried on a vertical shaft driven by the cam-shaft. The commutator is placed beneath the center part of the dash and slightly above the footboard. In all wire terminals the screw type of fastening is dispensed with. At the spark plugs each high tension wire ends in a hook, held to the plug head by a C-shaped spring on the plug and where the wires connect with the commutator they are provided with a split globular ball that fits into socket terminals in the commutator, making it only necessary to force the ball into the socket and to remove it by a jerk. The commutator, also of Rambler design, is unique in that the four wire terminals are not moved in advancing or retarding the spark. Within the casing carrying the terminals is a ring piece with segment parts that rest against the contact connections. These connect with the contact points. In advancing or retarding the spark the ring part is shifted.

The control of the Rambler is different from other machines in that the spark cannot be shifted without affecting the throttle control, there being no separate spark lever. Both spark and throttle are connected with the ring beneath the steering column, so that to increase speed the throttle is opened and the spark advanced until a certain speed is maintained, when the spark is then in its most advanced position. After that further engine speed is gained by using an accelerator. Another touch of home manufacture is found in the new carburetor, which is of the automatic type, with auxiliary air valve under spring control. By placing the carburetor close to the motor simple piping serves for conducting the gases. The piping is made from aluminum with brass unions, and has ground joints. The exhaust piping is an integral casting with four branches.

The new muffler is fashioned on cylindrical lines, being of medium diameter but

very long. It is carried lengthwise beneath the frame at the left. The interior of the cylinder is divided into several equal sized compartments by a series of cone-shaped plates arranged in pairs, two forming each partition. One is secured to a central pipe in the muffler and does not reach the muffler casing, and the other contacts with the casing but does not extend to the center. Between these two parts is a space through which the gases pass from one compartment to another, leaving one between the plates near the muffler casing and passing into the next



CHASSIS OF THE SHAFT-DRIVE RAMBLER

compartment near the center, the flow of gases thus following the line indicated by the arrows.

Transmission from the motor is through a leather-faced cone clutch, held in engagement by a heavy coil spring surrounding the clutch hub, which has its bearing on a continuation of the crankshaft, a race of ball bearings taking up end thrust when the clutch is engaged. A feature of the device is that the clutch spring is entirely enclosed and runs in oil. For engaging the clutch, a squared cross shaft on the car frame with a depending yoke engaging the collar of the clutch sleeve is used. To facilitate engagement and disengagement a compound pedal is used, so that a long leverage is gained, giving good foot movement on one end of the pedal and short movement of the clutch on the opposite end. Between the

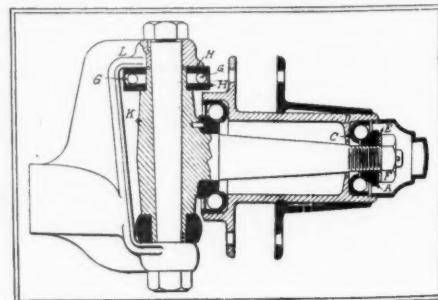
clutch and gear case on the large car is a double universal joint and in the smaller car a telescoping shaft is used.

Within the gear case, which follows typical construction throughout, are the main and countershafts A and B, placed side by side, with bearings between the halves of the gear box. Plain nickel babbitt bushings are fitted and in lubricating an oil bath is used. As a precaution against grit getting into the bearing, wire screens are placed in the bottom of the oil cups on the bearings. Three forward speeds and a reverse are given, the first with direct drive by using the internal toothed gear D on the square main shaft, meshing it with the master gear C on the end of the clutch shaft. For the second speed the drive is to the countershaft through the gears C and K and back to the main shafts by gears H and D, for slow speed gears G and E are meshed and for the reverse an idler L is used between gears F and E. On the main shaft are angular oil grooves to ease the movement of the sliding unit formed by the gears

E and D. Final drive, in the larger model, is by a differential countershaft and double side chains. The gear case illustration is of this model, with the differential cross shaft omitted. In the chassis illustration of the shaft drive car the novelties in the drive can be followed. The propeller shaft has but one universal joint and that at the front end, enclosed within a conical aluminum casing, which screws into the casing for the shaft. Two angular braces from the rear axle to the casing make the latter rigid with the rear axle. The joint casing has its support in two brackets secured to the frame cross piece, the casing trunnions having bearings in the brackets. These bearings are directly in line with the axis of the joint, the construction giving a rigid casing with one pivoted point between the axle and the frame, and as the rear springs are compressed pivoting them at the top gives the result gained by having sliding joints in the shaft. All changes in speed are gained through one lever. Spur gear differentials are used in all models.

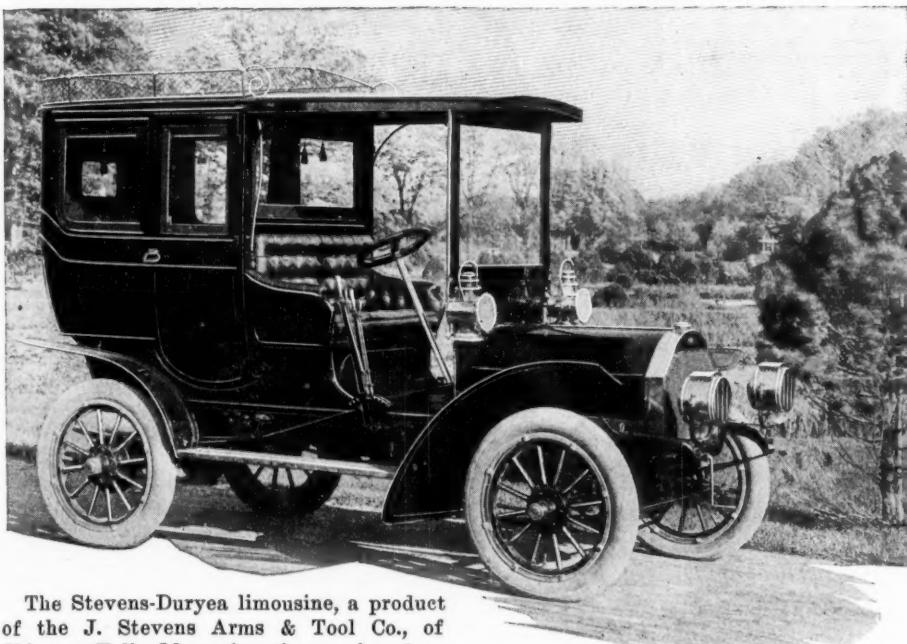
Three brakes are fitted, one working on the differential and in both cars enclosed within the differential casing, and two emergency brakes working on the rear hubs.

The bodies of both models are alike and are characterized by having the back of the rear seats only a few inches higher than the front seats, with wide side doors; individual front seats, and hollow metal dash.



RAMBLER BALL-BEARING FRONT HUB

## THE STEVENS-DURYEA LIMOUSINE



The Stevens-Duryea limousine, a product of the J. Stevens Arms & Tool Co., of Chicopee Falls, Mass., has the regular chassis of the Stevens-Duryea car marketed during the present season. Noticeable in the construction of this chassis is the 20-horsepower four-cylinder vertical motor, which, together with a multiple disk clutch and sliding gear transmission gear set is carried within one case, the whole easing having a three-point suspension, two

of the supporting points being on opposite sides of the front of the crankcase and the third point at the rear of the center of the gear case. Final drive is through a jointed propeller shaft. The use of a sub-frame is eliminated and the simplicity of the main frame is worthy of note. The

side pieces are parallel throughout their length and are tied together by cross pieces, one supporting the back end of the gear case and two near the rear of the frame, the front ends being connected by the two motor lugs that rest directly on them. The flywheel is carried on the front end of the crankshaft, just above the front axle.

The limousine body does not follow radical lines in design, the curves being similar to those used in several limousine designs. The rear corner curves are not large or of the king of the Belgians type, but decidedly easy throughout, an effect which is increased by the scroll-like bottom of the side entrances. Large windows—square in the doors and practically square in the sides and back—as well as a large one above the back of the operator's seat, provide excellent light. Pull curtains, speaking tubes, electric lights and all of the other limousine luxuries are installed. A canopy projects over the driver slightly further than the top of the straight dash and sliding glass front and drop side curtains are wet weather additionals. The front seat is not divided, change speed and emergency brake levers are at the right and on the steering column are other controlling devices. The arched-top hood with gilded sides and honeycomb radiator are used. Running sideboards, mechanically attached tires and very large front fenders are other features. The body finish as well as the upholstering is up-to-date and in colors to suit the purchaser.

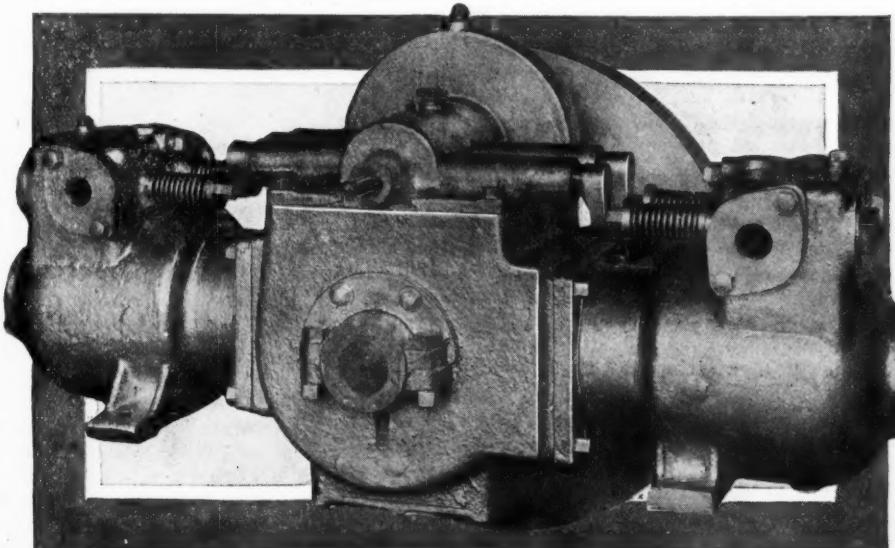
## A WELL-DESIGNED CINCINNATI-MADE MOTOR

Accessibility, now the watchword in automobile construction, is prominent in the 16-horsepower two-cylinder opposed motor built by the A. Streit Machine Co., of Cincinnati, O. Accessibility to the crankcase is obtained by having the case made in cubical-box form, with the top a large opening, over which the cap carrying the camshaft and push rods is attached, so that when the cap is removed the cam-shaft and push rods are removed, disclosing the crankshaft and connecting rods and not in any way interfering with the adjusting of any of the motor parts. In the ends of the crankcase are large openings, over which the cylinders are bolted and the bottom of the case is a removable plate. Support in a car frame is through lugs on the bottom of the cylinders. The case is not split for inserting the crank-shaft, the shaft being carried in bearings carried in large plate pieces bolted into the case ends. Integral cylinder castings, with the valve ports above the cylinder heads, are features in keeping with general accessibility. Mechanical valves, placed side by side, with the valves held to their seats through the usual coil springs, are used, but the position of the valve stems and push rods differs from the ordinary. On the ends of the push rods are depending feet, against which the ends of the valve stems rest, making it easy to remove the top of the crankcase and the push rods. In taking out the valves, screw caps in the ports directly in line with the valves have to be removed, when the valves be drawn out. The inlet and ex-

haust pipes enter the ports at the sides, and holes for the spark plugs are in the tops of the ports, allowing the plugs to be fitted vertically, in order to facilitate wiring and render removal easy. The internal construction of the motor is standard in practically every way, and with a bore and stroke of 5 inches the rated horsepower is furnished at normal speeds. The crank-shaft is made with a diameter of  $1\frac{1}{4}$  inches and has bearings  $3\frac{1}{2}$  inches long. The wristpin bearings are  $1\frac{1}{4}$  by  $3\frac{1}{2}$  inches. The cylinder walls, pistons and

piston rings are ground to standard size and babbitt bearings are furnished throughout. Complete, the motor weighs 375 pounds, 135 of which is taken up in the flywheel.

Lubrication is by either gravity or positive oilers, the reservoir in each case being located near the motor and supplying lead to the cylinder walls and crankshaft bearings. The crankshaft and cams are dependent on the splash. Pipe for conducting water from the radiator to the water-jackets can be coupled to the ports.



STREIT 16-HORSEPOWER OPPOSED MOTOR



THOUGHTFUL MOTORISTS LOOK OUT FOR SAFETY OF THEIR FELLOW ENTHUSIASTS

**Chauffeurs Provided**—R. J. Jacobs, Box 565, Pasadena, Cal., offers to find competent chauffeurs for owners contemplating wintering on the coast.

**Lost Car Reclaimed**—Joseph E. Hannon, a Los Angeles attorney, has just recovered a car lost in a peculiar way. A repair man was returning it when it broke down, so that the repairman was forced to leave it and go back to the shop. The police picked it up as a stray and held it until finally Hannon claimed his orphan.

**Fighting Dust**—In Paris the authorities are testing a new dust-laying preparation, a tarry compound which is spread over the roadway by means of the Lasally system. It is first rendered inflammable and then heated in a machine, afterward being transferred to the distributor, which is fitted with four brushes, which move up and down, and spread the compound evenly. Another method being employed is a preparation styled odooreole, which is mixed with water to the extent of about 30 per cent. The operator carries the odooreole in a small tank on his back, which is connected with an ordinary hose running to a water plug.

**Delays Show Allotments**—There will be a slight delay in the announcement of the allotment of space at the Chicago show, due to the fact that the applications so largely exceed the available space. All of the space set aside for accessories in the gallery has been allotted by the Motor & Accessories Manufacturers. For space in the automobile section, which occupies the main floor of the Coliseum and the first floor of the annex, there are eighty-seven applicants, who desire to show 368 cars, and who apply for 224 spaces, aggregating 62,845 feet. The number of spaces available is 131, aggregating 39,497 feet. The management seriously considered the erection of a supplementary gallery 18 feet above the floor, 30 feet wide and running around the building. This would have furnished about 18,000 feet additional space, but was abandoned on the advice of the building commissioner because of the danger of fire in view of the enormous

quantity of lumber required in its construction. The announcement of the allotment will be made in about a week.

**Thomas Oil Advocate**—E. R. Thomas, of Buffalo, is about to start a movement in favor of oiling the roads in the vicinity of that city and will endeavor to induce the Buffalo Automobile Club to take up the matter.

**Another Test**—The New York Motor Cycle Club will hold a regularity and judgment run on Sunday, November 12, instead of election day, as first planned. The run goes from the club house at 10 West Sixtieth street to Bedford, N. Y., and return, the total distance of 90 miles to be covered at the average rate of 15 miles an hour. A special prize will be given to the motor cycle coming nearest the exact schedule.

**Weaver Helped**—The whirlwind campaign which the city party in Philadelphia has been waging against the boodlers and grafters would have been impossible were it not for the automobile. On Thursday night of last week Mayor Weaver spoke at Bustleton, in the extreme northeastern section of the city, and at Paschalville, in the extreme southwestern part, the two points being fully 23 miles apart, besides addressing two other assemblages en route. The route followed by the mayor is thickly settled, and extreme speed was impossible, yet his honor kept his engagements to the dot.

**At It Again**—Just when the public had come to the conclusion that the fight between the automobilists and the authorities of Grand Rapids, Mich., had been forgotten, the war has broken out again. Halloran and Dunn, who have become famous in this part of Michigan for their efforts along the line of arresting automobile statute violators, have put their stop-watch in operation again. Four arrests under the statute have been made and more are promised. Although the automobile club is still quiet, there is something in the air. Four hotelkeepers, one of whom conducts a hotel partially owned by Mayor Sweet, are awaiting trial

in the superior court on a charge of keeping their bars open on Sunday. The arrests were made, it is said, at the behest of an agent of the automobile club.

**Aero Club Growing**—Sixty-four of the 100 members desired by the Aero Club of America for its founders' membership have been secured. The list is expected to fill up before the end of the month. The library committee is collecting a valuable lot of data about aeronautics with the idea of having the finest library in the world. Cooperation of leading experts has been promised.

**Motor Cycle Test**—Sixteen out of eighteen entries started on the tri-car trials of the Auto Cycle Club of England, running from Uxbridge to Wheatley and Banbury, returning by way of Aylesbury, a distance of 124½ miles. Thirteen finished. It was a combination non-stop, consumption and brake test, with a timed hill climb thrown in. The average consumption of the thirteen cars that finished was 3 gallons 1 pint for the 124½ miles. H. G. Priest on a Quadrant was first home, while V. Riley on a 9-horsepower Riley was first in the hill climb, going up the 1180 yards of gradient varying from 1 in 11 to 1 in 16 in 1 minute 51 4-5 seconds. The awards have not been made public. A. Hooydonk in a 4½-horsepower Phoenix tri-car, traveled the entire distance on 14 pints of gasoline.

**Has Judge Guessing**—Frank Smith, of Syracuse, N. Y., is giving the authorities considerable food for thought and County Judge W. M. Rose is unable to decide whether or not he is a criminal or just foolish. The question to be decided is whether a man who forges a check to get an automobile when he knows that he will have to forge another before he can buy gasoline to run it is in his right mind or not. Smith was recently arraigned in the county court on an indictment charging the forgery of a check for \$30 upon the Farmers' National Bank of Rome. He pleaded guilty to the charge, saying that he wanted to get an automobile. He is 22 years old and says he comes from Vermont. On account of his silly smirk Judge Ross thought that perhaps he might not be right in his mind and held the case open for investigation.

**Inventors' Chance**—The inventor who can produce the best automatic starting device for the motors of automobiles will have a chance to pull down a nice slice of coin, Henry Deutsch de la Meurthe having offered \$2,000 for such a device, the prizes to be awarded by the Academic des Sports. The money will be divided. The first competition, for which \$1,000 will be given, will be held next month, while the other will be during December, 1906, both to take place while the Paris salon show is open. The Automobile Club of France drafted the rules. The devices must be submitted in working order on a car having a one, two or four-cylinder engine, but if of the four-cylinder type the engine must be of at least 20 horsepower. It must be capable of being operated from the driver's seat, and must work equally well with the engine cold or warm. The jury in making its awards will take into consideration, among other

points, those of weight, size, simplicity, price, cost of upkeep, ease of action and facility for fitting to existing cars. Drawings must also be submitted, but will not be judged.

**Mileage Rivals**—There is no little rivalry as to who holds the mileage record in Hartford, Conn. Leonard D. Fisk has done 60,000 miles in his Panhard, while Dr. Emil G. Reinart has driven a Mark XII Electric runabout in his practice 25,000 miles making his rounds.

**Plunge Into River**—An English motor car took a plunge into the Mersey recently. It was being taken onto a ferry when the canopy top fouled some of the deck fittings. At the same time the crew eased the steamer forward and the driver of the car started slowly. He was on the gangway when the plank dropped and the car went with it. A woman passenger and the driver were rescued by two bystanders.

**Fighting Scorching**—The scorcher in Milwaukee has discovered that he is up against it. The police force is after him and its efforts are backed by the moral support of the Milwaukee Automobile Club and many owners of machines who are not connected with the organization. The police authorities have marked off a stretch on Grand avenue where the scorcher generally succumb to the temptation to hit it up. The space is accurately measured and police officers with stop-watches occasionally camp there for a while and time a few machines. The result is usually a visit to the police court on the part of some chauffeur who became unduly enthusiastic.

**A. C. A. Ticket**—Dave Hennen Morris has been renominated for the presidency of the Automobile Club of America. The other nominations are: For first vice-president, Colgate Hoyt; for second vice-president, Frederick G. Bourne; for third vice-president, Clarence Gray Dinsmore; for treasurer, W. S. Fanshawe; for governors to serve 3 years, Colonel John Jacob Astor, George F. Chamberlin, Schuyler Skaats Wheeler; for governor to serve 2 years, William Pierson Hamilton; for governor to serve 1 year, John E. Borne. These nominations will be voted upon at the annual meeting on Monday, November 20. There is no likelihood of an opposition ticket.

**New Tag Man**—H. M. Cutshall, ex-member of the legislature, has been placed at the head of the state automobile bureau, a sub-department of the highway department of Pennsylvania. On and after January 1 next all automobile licenses and tags will be issued by this bureau instead of by the prothonotaries as formerly. The new law requires a tag on both the front and rear of each machine, these to be issued with the license. Unless local offices are opened in the larger cities of the state much trouble is likely to follow the simultaneous dumping upon the bureau authorities of thousands of applications immediately upon the opening of the new year. Nothing covering this apparent defect of the new law was incorporated in the bill as it passed the legislature, and Pennsylvania

automobilists anticipate much inconvenience and delay unless something is done to remedy it before January.

**New Uses for Car**—An automobile led the grand march at the ball given last Thursday by the employees of the New York branch of the Pope Mfg. Co. at Manhattan casino. When the motor car is taught to dance there will be no more wall flowers.

**Enterprising Hawkeyes**—Newton, Ia., is proud of the growth of motoring in the town, twenty cars already being owned there. An automobile club is being talked of and one Newtonite, Thomas Balmer, is about to branch out and manufacture runabouts.

**Warns Motorists**—Participants in the recent economy test of the New York Motor Club appreciated the forethought of the Richmond County Auto Club, which has been carrying on a good roads campaign and which has posted warning signs at bad curves and dangerous hills throughout the county.

**Means Business**—Chief of Police Kiely, of St. Louis, is most strenuous in his crusade on automobile scorcher. Besides instituting a shotgun patrol, he has included the down town district in the territory to be covered by the cars manned by the police. It is charged that motorists dash through the crowded streets, paying no heed to the heavy traffic.

**Car Lost**—A careless Trenton, N. J., young woman lost her brother's automobile the other day, and, although she called on the police to help her, no trace of the machine can be found. She took the car out for a little trip, and when a few miles out in the country something went wrong, and of course she didn't know what it was. Leaving the car in the middle of the road, she went home and told her brother about it, and although he went to the scene of the breakdown at once, nothing could be seen of the car.

**Motor Cyclists Suspended**—W. T. Marsh and A. A. Hoyt, prominent in the motor cycling trade, it is announced by the Federation of American Motorcyclists, have been suspended from the national organization following the preferment of charges of disloyalty, conduct unbecoming members and prejudicial to the interests of the Federation of American Motorcyclists. The complainants ask for the expulsion of both men. According to F. A. M. officials, the trouble arose over the decision of a referee. He ruled a special racing machine out of a race restricted to stock machines, and the makers of the machine were so incensed that they attempted to form an organization to control the sport. The F. A. M. officials allege that the organization was formed merely by printing a letterhead bearing a title and the names of three so-called officials, all of whom were employees or attaches of the manufacturers concerned. The latter

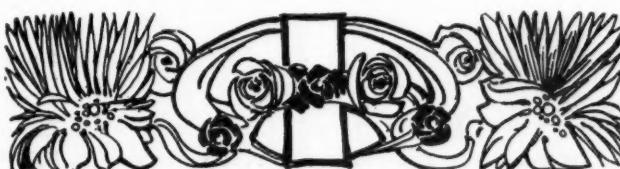
then hired a track and held two outlaw race meets. The riders who competed were all promptly suspended, four of them for life. Marsh and Hoyt are charged with having assisted these several movements, and also with serving as officials at the outlaw race meets, it is claimed.

**Seeks Site**—The Milwaukee Automobile Club has not yet decided on the location of its new quarters, but a special committee is considering several eligible sites. The new quarters will be opened by the first of the year, if not sooner, and the members of the club are looking forward anxiously to this event.

**Queer Charge**—Charles Vogeles, of the Vogeles & Dunning Candy Co., of Toledo, Ohio, and William Luck, of Detroit, while going through Milan, Mich., in an automobile, found the street blockaded with the hose of the fire department, which was engaged in practice. The firemen making no attempt to remove the obstruction, the automobile was run over it. The firemen promptly turned the hose on the autoists and the force of the stream was so great that Vogeles was knocked from the machine. Warrants have been sworn out on a charge of assault and battery.

**Fear for Road Race**—Cable advices from Havana state that subscriptions are coming in so slowly that there is danger of the Cuban road race being abandoned. The race last year left a deficit of some \$6,000, which was paid by the Havana Racing Association. This year a larger sum will be required and the association declares it cannot and will not stand the expenses. So those who derive the benefits are invited to come forward and drop their contributions into the hat. A promise has been secured to improve the roads a bit, but the city council is apparently fighting shy of the invitation to lend a financial hand. It is figured that \$14,000 will be needed.

**Is Shoe on Other Foot**—Up in Cheltenham, Springfield and Whitemarsh townships, Montgomery county, Pennsylvania—the trap country just north of the Philadelphia line—it looks just now as if the automobilists who have contributed no little during the past year toward fattening the treasuries of county and township were going to have an inning. It appears that the money collected in fines is to be applied to road improvement, and the most urgent use that could be found for it was in paying the cost of widening Church road, one of the automobilists' favorite stamping grounds. The township and county authorities agreed, and the road was widened from 33 to 40 feet, just about using up the \$3,700 collected in fines—according to the calculations of the authorities. It now appears, however, that the awards to those who own the various expensive properties abutting on Church road are grossly inadequate and up to date about thirty appeals have been filed against the action of the road jury. Present appearances indicate that before all hands are satisfied fully \$7,000 or \$8,000 will have to be paid for the work, and now the automobilists are chuckling to themselves at the mess their persecutors have made of things.





**G**ERMANS have not been slow to appreciate the advantages of the motor from a commercial standpoint and as early as 1897 one of the Berlin breweries, the Bohemian, employed a gasoline machine in the delivery of beer. The great German industry of malting and brewing has been one of the first to utilize the automobile and has been the foremost in encouraging the economic and efficient construction of the machines by manufacturers, among whom the Daimler people have been the most successful. On the crowded business districts of the capital city the heavy keg and bottle delivery wagons are common sights.

The German commercial wagon looks every inch a business proposition, and intended for a decade and not a month of service. Americans attempt in many cases, in building commercial trucks, to produce a machine of graceful lines but lacking that important essential of a business wagon, rigidity and strength, intended to withstand the heaviest service. This is prominent in German cars, particularly in the wheel and tire construction; the wheels being of the heavy artillery pattern, with wide rims. In five cases out of ten they are shod with broad steel tires and in other cases heavy solid rubber tires are used on

the front wheels and double rubber tires on the drivers. The shoe brakes, operating on the surface of the tires of the rear wheels, are not as graceful as hub brakes, perhaps, but the experience of German builders is that with the ordinary driver these brakes are less harmful to the car than hub brakes and work little injury to the tires. Brake application is by means of a heavy side lever. This type of brakes, it must be understood, is not used on all machines, but is very general on those weighing over 2 tons and capable of carrying 4 or 5 tons.

Another feature with the heavy German commercial wagon is the low speed ratio to the driving wheels. The salesman's story that "it is rated at 14 miles per, but can make 20 to 25 miles with ease," is not practiced in Germany, and as a result the heavy wagons are not racked to pieces in a few months by fast driving over rough crossings and poorly paved streets. Thanks to the government of German cities, poorly paved streets are as uncommon as well paved thoroughfares in many American cities, and as a consequence steel tires are much used on heavy wagons, the extra vibration occasioned thereby not injuring to any perceptible degree the motor and other running parts.

Load carrying appears to have been the watchword of every builder, whether the Daimler concern or the least known manufacturer. With good streets the 7-ton load, while massive to the limit, is not inconvenient in being piloted or propelled

through the streets. Americans who have been accustomed to looking to England, Germany or France for the best in commercial construction, as well as in pleasure cars, may be slightly disappointed in finding that the vertical motor in front of the dash with the driver's seat behind it is still responsible for half of the carrying space on the chassis frame. In some cars the back of the seat is midway between the front and rear axles and the load carrying platform is consequently thrust far behind the rear axle and the control of the machine correspondingly impaired, as the skidding on wet streets and in winter seasons is much accentuated. The scheme of placing the driver above the motor, thereby making his seat high and so leaving more space for load carrying, has not as many followers as in England, the present leader in the commercial game. The heavy German driver perhaps finds it sufficient work to mount to the ordinary seat instead of having to do a step-ladder act where the seat is mounted over the motor.

It is generally acknowledged that the tube radiator with water tank is more serviceable for commercial trucks than the honeycomb type, but the German in a few cases disputes this point, even the Daimler concern using its familiar automobile radiator on many of its heavy trucks. The danger of rupturing this kind of radiator is great and the difficulty of repairing it is well known. The tube radiator, on the other hand, is strong, capable of resisting a good jar, and when damaged can be repaired by the ordinary mechanic. A touch of wisdom is found in the design of many of the cars fitted with the tube radiator in that it is hung beneath the car frame, with the front part of the frame protecting it in front, so that if the truck collides with other wagons the frame, in taking the brunt of the collision, protects the radiator.

The wisdom shown in centering the controlling devices of trucks around either a vertical or inclined steering column is general with all machines and the broad leather-cushioned seat with straight back is another touch of good sense. Rear fenders are unknown, the German having hit early upon the idea that on trucks they are the greatest of all nuisances. Many trucks have little fenders over the front wheels, but the present tendency is to dispense with fenders entirely or to make them as small as possible. In the line of lamps similar good judgment is met, the big style being properly exorcised



BOTTLED BEER WAGON OF THE JULIUS BÖTZOW BREWING CO., OF BERLIN

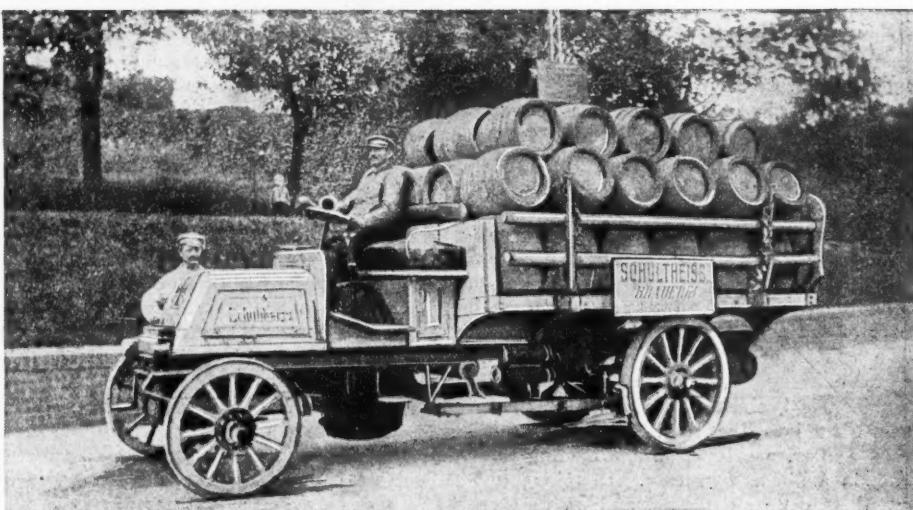
and a pair of the smallest headlights, carried on the top of the dash, substituted.

The Bohemian Brewing Co., one of the half-dozen big malting houses, has now the largest stable of automobiles in Berlin, twelve motor wagons, traveling out daily from the brewery, doing the distributing and collecting business. Most of the cars cover at least 63 miles and some more than that distance each day in going to and from the suburbs, such as Wittenberg, Buchholz and Trebbin. The first motor wagon purchased in 1897 is still doing its daily routine with the rest of the stable. One of the big wagons used by this company in distributing to the keg trade has the rear wheels fitted with shoe brakes and, in spite of the heavy appearance of the car, skims over the cobblestone pavements with comparative ease. The broad rear wheels contribute much of the ease with which the vehicle travels. Flat-iron tires are used. The driver sits in front, just in the rear of the motor, and controls through a vertical steering column.

The Bohemian brewery uses also a bottle wagon of the broad-tired type with a box bed. It is a product of the Daimler concern and is conspicuous by a high box body with several decks for bottles. Carrying space is increased by crowding the vertical motor well over—in fact, ahead of—the front axle, leaving ample carrying space.

A large 10-horsepower machine, with iron tires, built for the bottle trade, is used by a prominent brewery and has the rear wheels much larger than those in front, giving the machine a wagon-like appearance. It has an American type of rack for containing the cases of bottles.

The Daimler firm has built two heavy bottle wagons for the Aktien brewery. They are two-cylinder machines, yielding 16 horsepower, with the two cylinders huddled beneath a Renault design of hood, except in that the radiator is hung low in front of the axle. Both have the hay-rack style of body, which is well suited for carrying cases. The road wheels are of wood, artillery pattern, with wide steel tires and brake shoes. The Versuchs company uses similar wagons. One of the old high wheeled type has an enclosed body and short motor box. The operator sets on top and looks much like a circus wagon driver on the highest point of a van. The other wagons are of the more modern type, with long wheel base, the driver sitting at the rear of the hood. The brewery has a large



THE SCHULTHEISS BREWERY'S IMMENSE KEG BEER WAGON

outlying trade and the machines are frequently called upon to travel long distances. The company has a well-fitted repair shop where the cars are thoroughly overhauled every night and prepared by expert machinists for the heavy work of the following day.

Perhaps two of the newest and best delivery wagons in Berlin are operated by the Schultheiss brewery. They are two-cylinder motored machines of Daimler make, each yielding 8 horsepower, and travel at an average speed of 10 miles an hour over all sorts of pavements. The wheels are broad and the tires are of heavy rubber. They are capable of carrying 7,920 pounds of merchandise, have been in use since the first of May, and have needed only minor repairs. Both are for the bottle trade and have very commodious enclosed carrying compartments, with top rails for carrying large cases of bottles. Double tires are used on the rear wheels and single in front. The same house owns a large wagon for the keg trade, being a machine weighing 6,300 pounds and carrying 3-ton loads. It has bar sides, solid tires and surface brakes. The 8 to 12 horsepower motor yields an average speed of 7½ miles per hour. This machine has been in use a year and is in excellent working order, although its weight-carrying capacity is nearly every day tested to the utmost. The company, in deciding upon the machine, selected this one because of its ability to make hurried runs. Frequent-

ly heavy deliveries are made to outlying sub-stations and quick return runs are then made with empty kegs. The truck has been particularly successful in its tests. Fifty kegs are carried with ease and in emergencies any number of additional kegs can be heaped on top.

The wagons used by the Botzow brewery are 20-horsepower machines, weighing 6,600 pounds each and carrying 3-ton loads. They make two and three trips daily through the business districts, covering about 70 miles each. The wagons were put in service at the first of the year. The broad rubber tires, solid in front and double behind, make the going practically free from vibration.

#### CANDY MAN USES MOTOR CARS

J. George Smith, of St. Paul, Minn., is an automobile enthusiast who can give some valuable pointers on turning automobile enthusiasm into practical channels. Incidentally, Mr. Smith is a retail confectioner, who holds the exclusive and fashionable trade of the city in a grasp which has aroused the envy of all competitors. Five years ago he put into commission the first regular automobile delivery wagon in St. Paul, a Waverley electric, and the original



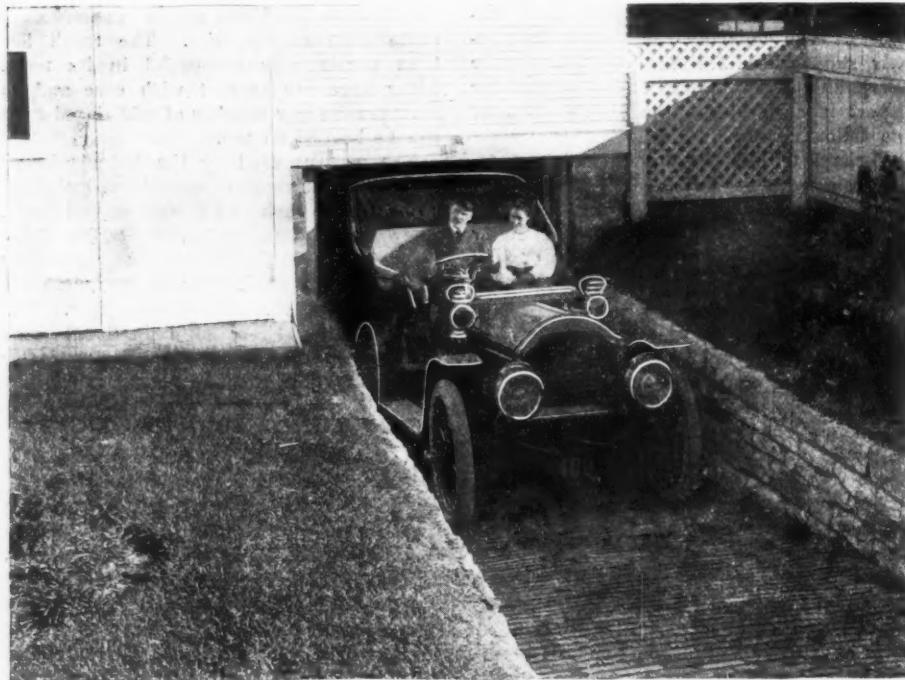
VARIETY OF AUTOMOBILES USED BY J. GEORGE SMITH, OF ST. PAUL, MINN., IN THE CONFECTIONERY TRADE



car is running today, with three more as companions. When Mr. Smith embarked in the automobile field in 1900, Smith's automobile delivery stirred the interest of the entire city. Recently automobile deliveries became so numerous that something was necessary to keep the interest centered about Smith's, and the Waverley factory has recently turned out to order a new car, described recently in MOTOR AGE. Two electric deliveries, an electric runabout and a Pierce Great Arrow make up the Smith squadron now, but the cars are only a small part of the equipment of the establishment. The confectioner has taken an ordinary store building on Sixth street, the most fashionable business street of St. Paul, and has built into the rear, facing on Automobile alley, a private garage holding three and, in a pinch, four cars. In this garage are three charging plants, and on the curb in front of the store is another charging plug. As a finishing touch, Mr. Smith has

storage houses and other garage features.

Mr. Smith estimates that the charging of his batteries does not cost on an average of more than \$4 or \$5 per month for each car. This includes the new electric, which carries over 200 small incandescent lights; and also includes the charges which are turned through the private lighting system in his residence. Outside of this expense and battery repairs, which he estimates at \$50 a year, there are practically no expenses except the salary of the man who runs the car. Each machine makes about 10,000 miles in a season. The new electric is running from 30 to 40 miles each day, and it is a fact that the Smith deliveries have never been tied up by serious accident. Mr. Smith does not allow any of the electrics to run beyond second speed, and many accidents are doubtless avoided in this way. Machines are kept constantly in charge at the curb, or in the garage, when not in service, so there is no giving out of power.



MR. SMITH'S GARAGE IN THE CELLAR OF HIS RESIDENCE

turned the basement of his house, in the residence section on St. Anthony hill, into a garage capable of holding the three electrics; and has for the past 3 years been running a 50-lamp electric lighting system from the batteries of one of these cars. The Smith store on Sixth street is at the corner of the alley, next to the Metropolitan theater. The building is 23 feet wide, and the salesrooms and ice cream parlors extend back to within 10 feet of the rear end. The back of the store has been narrowed down to 15 feet, and Mr. Smith is left with an L-shaped space outside the walls of his salesrooms, which at the widest part is not more than 10 feet. Large double garage doors were put on the alley side of this space, so that nearly the entire side can be thrown open, and under proper manipulation four cars can be stored there. The garage is equipped with all necessary apparatus, abundant charging apparatus, and leaves the confectioner absolutely independent of repair shops, washing stations

The house garage is something that was worked out with great pains by Mr. Smith. His house stands on a 40-foot lot and the entrance to the basement is from an alley in the rear. Here a cement decline nearly 60 feet long leads to the cellar, where big double doors allow the entrance of any of the machines, including the Pierce Arrow. It cost him \$200 to construct the driveway, build up stone walls on the sides and properly drain the basement. He says a new house can be fitted with a basement garage at a cost of \$100. At first water flowed down the cement driveway and flooded the cellar. An inside drain would not carry it off, and to solve the problem an outside 8-inch drain was placed just outside the doors. This carries for most of the water, and the inside drain takes the balance and at the same time acts as a drain for the washing stand in the basement. An extra set of batteries in the basement, charged from one of the electrics, gives storage power for the electric lights in the house.

Altogether, Mr. Smith has the maximum of efficiency and effect at the minimum of cost. Advertising is one of the strongest reasons for the popularity of Smith's, and the automobile deliveries have materially aided in this branch. The new Waverley has "Smith's" in electric lights in front and rear and electric lights above the sides, which illuminate the signs on the side of the car. At night the car stands in front of the store, drawing power from the plug on the curb and at the same time emblazoning "Smith's" upon the air.

#### BREWERS INSPECT BIG TRUCKS

English brewers are closely watching the progress of the commercial vans, as was shown at the twenty-seventh annual brewers' exhibition in Agricultural hall, London, 3 weeks ago, when four commercial vehicle manufacturing concerns—Jesse Ellis & Son, Messrs. Fodens, Savage Brothers and the Yorkshire Patent Steam Wagon Co.—were represented. Savage Brothers had their Little Sampson steam tractor, the engine being mounted on springs. Volute springs are fitted to each bearing at the rear axle and there is one laminated spring to the center of the front axle. The tank capacity is enough for a journey of 8 miles, drawing about 6 tons along an ordinary road. Besides the Little Sampson the Savages had a 5-ton steam wagon with a boiler of the locomotive type, with a fuel shoot at the top of the arch, so that the driver and stoker can easily get at their work of feeding the fire, or inspecting the boiler. Two special poppet type safety valves are fitted, one set to blow off when the maximum working pressure of 200 pounds to the square inch is reached. This connects with the muffler. The other valve blows off at about 10 pounds above the working pressure and is only used in the event of an accident to the other. The feed water heater consists of a chamber containing straight, cold drawn steel tubes, through which the feed water is forced, and which are surrounded by the exhaust steam. The rear axle is of the fixed type, and made of a solid rectangular forging. The double acting brakes will stop the vehicle on 12½ per cent gradients.

In the Yorkshire 5-ton steam wagon is used a boiler of the double-ended locomotive type, the engines being compound, with 4½ by 7½ cylinders. The rear axle is carried in spherical sliding bearings, arranged in such a manner that the gearing is not affected by the rise and fall of the wagon on its springs. Two speeds are provided, corresponding to 2½ and 5½ miles an hour. The boiler feed is a force pump, worked by the crank shaft, with an injector for emergencies. The brake gear is of the screw-down type, acting on both rear wheels. The tank has a capacity for 12 miles and has a steam water lifter.

The Ellis exhibit consisted of a 4-ton brewer's wagon, which can be used for either the barrel or bottle trade, with two speeds and a reverse, and with the main axle running in steel roller bearings. The Ellis patent water tube boiler is used. The Fodens' rig is fitted with a horizontal multitubular boiler and double crank compound engine. The machine is heavily constructed, has broad driving wheels, and is well suited for heavy service.



TRI-CARS USED BY THE WESTMINSTER GAZETTE IN PAPER DELIVERY

**Line for Kentucky**—An automobile mail and passenger system is to be put in operation between Milton and Carrollton, Ky. It is proposed to put in a 24-passenger canopy-top automobile and to run it on regular schedule.

**Entirely New**—The Ohio Manufacturing Co., of Upper Sandusky, O., is building a specially designed gasoline traction truck, which, if successful in the use for which it is intended, will change the oil business in Ohio. The machine will furnish motor power for drilling and dressing tools, and will also carry a movable derrick from place to place.

**Will Test Buses**—The Motor Union of Western India will hold reliability trials from January 17 to 21, inclusive. From Bombay to Poona will comprise the first day's run and from Poona to Mahabaleshwar the second day. A hill climbing contest is scheduled for the third day and the remaining time is for the return run, over the same route, to Bombay.

**Cook Outdone**—Thirty days of touring in the south of France, touching such centers of population as Nice, Monte Carlo and Mentone, is a program arranged by the London Motor Omnibus Co. in one of its big Vanguard omnibuses. The route will be by Rouen, Orleans, Avignon, Orange, Marseilles and Hyeres, while such places as Grenoble, Dijon and Paris will be made on the return trip. A fare of \$250, including traveling tickets, hotel accommodations, meals, motor excursions and the service of a competent conductor, is charged. Already all accommodation has been taken up and more are applying.

**Paper Uses Tri-Cars**—Delivering newspapers by tri-cars in the heart of old London can be considered one of the latest conquests of the gasoline motor. The Westminster Gazette, noted from time immemorial for its dispatch in delivery, has installed a fleet of four tri-cars for covering the heart of the city in distributing its papers. The tri-car, selected because of its light weight and good speed, is admirably adapted for work on crowded streets, as it is capable of threading through congested thoroughfares where its big brother, the motor car, would be stalled behind endless lines of wagons for blocks at a time. These little hustlers can pick their way with astonishing quickness. The papers occupy a conspicuous place between the two front wheels in a carrying box, the outsides of which are utilized in post-

ing the leading features of the paper. The single cylinder motors are mounted between the driver's legs, motor cycle style, and drive to the single rear wheel through a roller chain.

**Organized New Company**—Ford Wharton, of Sharon, Pa., has formed a company to operate touring cars between Sharon and Mercer. A line will soon be in operation between Warren and Cortland, O., a few miles distant.

**Model Bus**—The Loveless Transfer Co., operating a motor bus line out of Warren, O., uses a Packard bus, which has a unique form of body construction, the chassis, however, being the same as used in the regular 1½-ton Packard trucks. A glance at the body lines reveals innovations in the compartment for the driver in front with its vestibuled appearance, glass front, side doors and accommodation for light baggage. The passengers—carrying part in the rear is unique in possessing a perfectly enclosed compartment reached by a side door rather than one in the end. In the rear is a drop platform, to which heavy trunks can be strapped. It would be difficult to design a vehicle better intended for use in inclement weather, the heavy box design and glass windows affording excellent protection, while not restricting the lighting arrangements. All of the operating devices are entirely enclosed and in point of comfort the bus

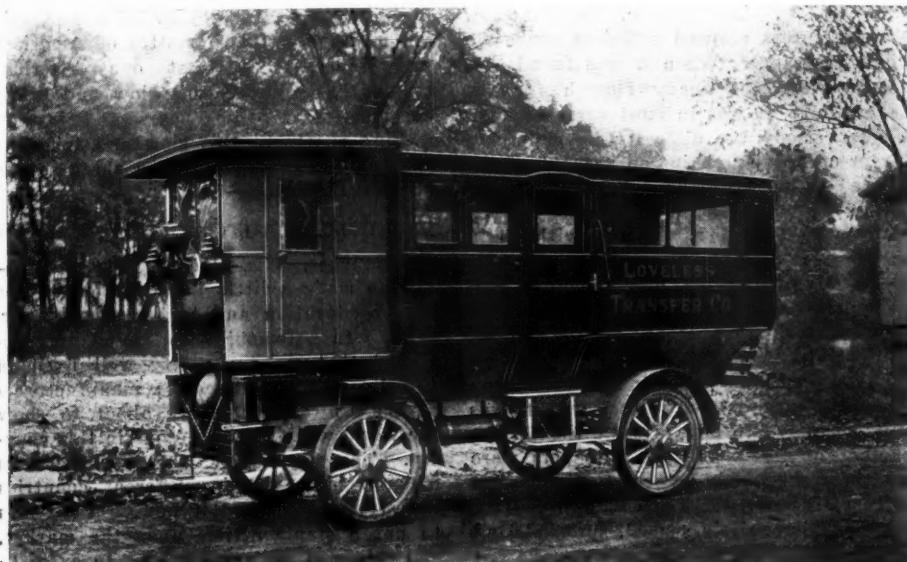
can be looked upon as a good sample of the Pullman motor coach of the days to be.

**New Truck Maker**—The Commercial Motor Truck Co., of Toledo, O., with a capital stock of \$20,000, has been organized by C. A. Kellar, J. E. Moran, H. M. Hocver, Gus Haas and Otto Kniegge. The company will manufacture gasoline motor trucks. The location for a plant has not been fully decided.

**For Pleasure Seekers**—George W. Boyce, of Syracuse, N. Y., president of the Lewis Point Land and Improvement Co., expects to start an automobile transportation line along the shores of Oneida lake, taking in Oneida, Lower South bay, Lewis point, Upper South bay, Canastota and other places. Lewis point is being developed as a summer resort and the promoters are planning to get all the transportation lines feeding into it as possible.

**Wants Electric Vehicles**—Commissioner Cantine, of Albany, N. Y., is starting a shaking up in the police and fire departments in the city, and advances as a part of his new scheme the introduction of electric patrol wagons to take the place of the horse-drawn wagons. He is also advocating the buying of a motor runabout for the exclusive use of the chief of the fire department to be used in case of fires and when on rounds of inspection.

**Starts With Cartridge**—The Wolseley Motor Car Co., of Birmingham, England, has dispatched to the General Electric Co., of Schenectady, N. Y., a six-cylinder vertical gasoline motor of 140 horsepower, designed to actuate the generator of an electric railway carriage. The novelty in the design is that the first three cylinders in sequence of impulse are furnished with cordite cartridge breech block. In these a charge is electrically exploded when the engine is to be started. They give the initial impulses which start the group and the usual cycle of operations succeeding the breech blocks are removed and sparking plugs substituted. In England when big gasoline engines have to be handled for stationary work, a small supplementary engine is filled for starting purposes, but the cordite cartridge is a simplification.



MODEL PACKARD PASSENGER BUS USED BY THE LOVELESS TRANSFER CO., OF WARREN, O.



### CHAINS AND GEAR DRIVE

Hartford, Conn.—Editor Motor Age—It might be stated that the Italian car which made by far the most wonderful exhibition in the Vanderbilt cup race, was equipped with double chain drive. This, however, probably proves nothing in favor of the chain transmission, as the skillful and fearless Lancia would undoubtedly have made a similar record with a gear-driven machine if the parts were in good proportion and backed up by a sufficient amount of power. Both the chain and bevel gear methods of transmission have given manufacturers and users a lot of trouble, but step by step the difficulties have been eliminated until both styles have made records of which we may well be proud.

I have been told that a certain American racing car which the makers wished to enter in the cup race was found before the eliminating trial to be considerably over weight, but they brought it to a point well under the stipulated weight by abandoning the gear drive and replacing it with the double chain. If this is true it would indicate that the double chain transmission gives greater strength with less weight, and this point should not be passed unnoticed. A number of years ago our automobile manufacturers equipped their steam cars with bicycle chains and then added extra seats for additional passengers without increasing the size of the chain. This gave the chain drive a black eye from the very start. Notwithstanding this fact, I believe about 80 per cent of the cars are chain-driven at the present date. The chain and sprockets used on practically all of the earlier model gasoline cars were not correct and suitable for the purpose, and most of the chains were damaged by interference, as but few manufacturers allowed sufficient space for chain clearance. When it was found that chains were not heavy enough for the severe duty, it was in most cases impossible to remedy the difficulty by supplying larger or heavier chains on account of the limited space provided. When the gear drive was presented it was welcomed by many who had been annoyed with chain troubles, but later on they were equally disgusted with bevel gear troubles and difficulties with universal joints, thrust collars, weak rear axles, limited power, and other things of like nature.

Certain manufacturers made their own sprockets and evidently assumed it was only necessary to mill in same the correct number of teeth. If the sprockets were not the right width, not cut to the correct bottom diameter, teeth too straight on the sides and irregularly spaced, sprockets out of line, etc., it was supposed to make but little difference. When some of the same

manufacturers commenced to experiment with the gear drive they were obliged to purchase their gears from manufacturers who were expert in this line and it was necessary to pay a high price for the quality and accuracy required to insure the gears revolving. If bevel gears were cut in the manner some sprockets have been the result would be astonishing. I believe both the shaft and chain drive at present on many cars are a success, but imagine the chain will be by far more popular in the future for the following reasons: Less weight, less friction, lower cost to manufacture, lower cost to repair, less time to repair, ease of changing gear ratios to suit road conditions for various parts of the country, saving on tires by less weight, more reliable rear axles for rough roads and heavy loads, and in case of an accident the chain-driven car may be pushed off a railroad track or from the center of a road. One pound added to the axle is harder on both tire and axle than many pounds added above the springs.—W. E. C., Whitney Mfg. Co.

### CRANKSHAFT MANUFACTURE

Hartford, Conn.—Editor Motor Age—The method of crankshaft manufacture in America has been to drop forge the shaft in two pieces, then electrically weld and machine. To drop forge it is necessary to heat billets to cherry red, and the only way to get the strength back into the metal—that which is lost in the heating—is to hammer the forging until the normal strength returns. In Europe this method is not used, and is the one point of great criticism directed at the way of constructing American cars. The European method, made possible by the cheap cost of labor, is to drill squares out of a solid block and machine the shaft cold by lathe and milling machine. It is a matter of American progress that at least one American builder has adopted this slow and costly construction for 1906 cars and is now making shafts in this slow and laborious fashion, the completion of a shaft requiring 3 weeks' time.—S. H.

### TECHNICAL AUTOMOBILE MEN

Milwaukee, Wis.—Editor Motor Age—I have made a little investigation of the higher education and higher schools, pertaining to automobile work, and am convinced that we are pretty well fixed in this line. The automobile manufacturers of the United States are about to show the world what has been done in this country. The race among the manufacturers of automobiles in the different countries is a trying one, and it now is their aim to put a staple article upon the market, and this at a moderate price. In order to do this, the work is put into experienced

hands, but where is the theory which occupies so prominent a seat in all our sciences? Who are the superintendents of automobile factories of today? They are men who worked up from the bench in bicycle factories, self-made men and practical, it is true, but of theoretical knowledge they have little.

Why do we need higher schools? Have we not some of the best engineering colleges of the world? Why not make some use of the graduates? Should the manufacturer investigate, I am positive he would be surprised in most of these men. Some have followed the automobile from its infancy to its present state and have taken a critical view of it in its smallest detail. They are good mechanics and can handle men successfully, systematically and more economically than the self-made men; yet we stand pat on the self-made men, who have little knowledge of the construction and the theory of the motor car, the combustion motor, the steam engine, the electric motor and the subject of ignition.

Some say there is employment for technical automobile men, and that there always will be—as they are imperative to the construction of motor cars—especially more so now than in the past; yet the manufacturer does not make use of them. Why not? Because he cannot get the technical graduate for the same amount of money that he can get the self-made man. Here his payroll is smaller and there he spends it tenfold in a roundabout way. The technical man does not wish to be put on a level with the ordinary laborer. Why did he spend his time and money on theory—to satisfy his own desires or to be of benefit to mankind?

In my travels throughout the United States the past summer I came in contact with a number of these technical men—men well experienced in all the phases of automobile work—who are at present following work in an altogether different field, because they are not valued as high as they ought to be. First make use of what there is, and, when this lot is exhausted, there still remains time for higher schools.—N. BINGENHEIMER.

### FAVORS KEROSENE BURNERS

Northampton, Mass.—Editor Motor Age—Having had 3 years of experience with kerosene burners, I find some cannot use them while others seem to obtain very good results. I wish to say that I bought several gasoline burners in 2 months and had so much trouble with them that I finally bought a kerosene burner. While I ran it for 1,700 miles, it was not any too good. It would go out and clog up, so I got another one which cost \$45. I was unable to get any steam with it. I finally ran on to a party telling me about a kerosene burner called the Barrett, so I got one and have used it for 3 years. It was not just right in some parts, but for heating I have never seen its equal, so I now have it fitted with a special very heavy coil which sits right over the small pilot. This coil is 4 1/4 feet long, all in one piece, and is fitted with special piping. It will not clog. This burner is very light and double feeding, with nozzles so fixed as to catch all the carbon. It is easily cleaned.

I know of a steam car in this city which is equipped with one and the nozzle has not had to be cleaned all summer. My experience was with gasoline. Formerly I got about 8 to 10 miles an hour, but now I get over 12 and on good running about 15. On a test on a fine state road I made 14 8-10 miles with three quarts with a car that had three empty seats, weighing in all 1,445 pounds. I used a 14-inch burner and one Mason engine. This burner I have started in 7 minutes; that is, with 150 pounds of steam. It burns quietly. Even the pilot cannot be heard while in the car. Others I have used and seen roar so they can be heard a long way off. One pilot that I tried roared so loudly I was afraid to use it. This pilot is under the bottom of the burner and is air tight as well as the burner itself. There is no back firing from it, and after over 1 year's use of it the tube and boiler is as clean as when put on. No soot at all comes from it. There is a car here in the city which would not make over 6 or 8 miles an hour with gasoline, but will now make easily 20 with kerosene and costs less than half to run it than it did with gasoline. Having read a good many articles on this kerosene burner, I tell my story, hoping it will help some out of gasoline troubles. If there is anything that they do not understand I will gladly answer them if they will take the trouble to write me.—J. HARRIS WIGHT.

The correspondent's figures of 6 or 8 miles an hour when using gasoline, and 20 miles when using kerosene, are rather extravagant or else show distinctly that there was a lack of knowledge in the handling of the gasoline burner. The particular gasoline burner in question possibly needed repair or cleaning.

#### PRIMES THE CYLINDERS

Pittsburg, Pa.—Editor MOTOR AGE—I have had the same trouble in starting a motor of which a correspondent of MOTOR AGE complained, and after vexatious trials tried priming the cylinders, using a small rubber bulb as an atomizer. Treated in this manner the motor was always ready to start on the first turn of the starting handle. Now in cold weather I resort to this method always and never have the least trouble. It takes a few moments, but it saves time in the end.—E. V. W.

#### HOT AND COLD RIVETS

Toledo, O.—Editor MOTOR AGE—I have read your article on riveting, but do not agree with you. I have been building frames for an automobile company in this town. When I first started to work for this company riveting was done by hand and put in cold; later on, pneumatic rivet-

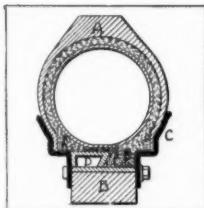
ers were installed and the rivets put in hot. I found that a rivet put in cold by hand was not as solid as when it is put in hot. In taking a frame apart a rivet put in cold is easier to chop out than one put in hot, because a rivet put in cold is not pounded into the hole as solidly as a hot one. A rivet put in white hot is like a chilled casting when cold. The riveters that I ran were used for 5-16, 3-8 and 7-16-inch rivets. These machines would not mash a head on cold rivets, but when put in white hot the machine, running under 90 pounds pressure of air, made a perfect head. This applies only to rivets 5-16 inch in diameter and over; rivets under this size are better put in cold and by hand.—VICTOR H. CHRISTEN.

#### POWER COMPARISONS

Delaware, N. J.—Editor MOTOR AGE—Will you please advise me what horsepower a 5 by 5½-inch double gasoline engine will develop, a double cylinder motor with 6-inch bore and 4¾-inch stroke? I want to know which has the more power for automobile use?—John H. Hoyt.

Presuming that the motor is well made and well proportioned, the 5 by 5½-inch double cylinder should give 11 horsepower at 700 revolutions per minute, and the 6 by 4¾-inch motor, at the same speed, should give 13.3 horsepower.

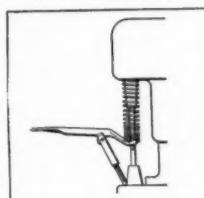
## NEW IDEAS PERTAINING TO THE AUTOMOBILE



Selden's tubeless pneumatic tire is one of the few not using an air chamber and having the casing split and secured to the wheel rim similarly to mechanically secured pneumatic tires using the air tube. The tire has a thickened tread, part A, and carries a stepped lip E on one side, which is removable when removing the tire, and a hooked-shaped lip F on the other side, the hook partly surrounding the piece D resting on the wood rim B. When the flanges C are tightened in place by numerous cross bolts the curved edges of the lips E and F are forced together sufficiently to hold the air pressure with the proper inflation.



Hill's method of removing cotter pins from valve stems, when removing the valves, is simplicity itself. One end of the lever fits beneath the cup, holding the bottom of the valve spring and the rod, acting as a fulcrum, rests in the angle of the push rod casing and the crankcase. By a downward movement of the outer end of the lever, the spring cap is raised, when the cotter pin can be taken out with ease and speed.

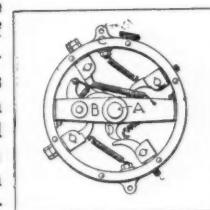


The Toni single tube pneumatic tire, which is attachable by means of clincher-like lips, is somewhat of a novelty. The wheel rim has the corners next to the tire cut way, as shown at G, into which fits snugly the square lips A of the tire. For holding to the rim are side flanges B, retained through the medium of the cross bolts D in the rim, the nut C retaining the flanges. A circular plate F fits on top of the rim E and the lugs and has resting on the top of it the laps H which when the tire is inflated are held firmly on the plate F.

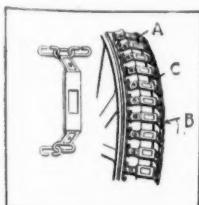
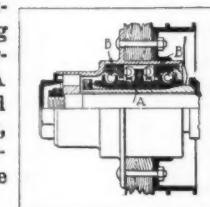


The Drakner commutator, designed for non-trembler coils, is carried on the shaft A, to which the cross arm B carrying the pawl-like contact D is secured. The four stationary contacts are in the form of a pivoted pawl, held in position by a coil spring attached at one end to

the casing and at the other to the body of the pawl. The rotating contact pawl D is also held in position by a longer coil spring. The action of the spring is such that contacts are certain at high speeds and by their use vibration is materially reduced, resulting in steadier and longer contacts. In timing the spark the casing is turned in the supporting ring, carried on the crankcase.



The Hoffmann ball bearings for the road wheels of automobiles are designed on the compound principle, part of the balls being for radial support—that is, carrying the weight of the vehicle—and the others for taking up end thrust. The cone A has on its upper surface a raised central part between the bearings D D for separating these end thrust bearings, the opposite sides of these balls resting against the vertical side of the cups B, which form a race for the balls C for carrying the weight of the machine. A little pedestal can be noticed beneath the balls D D for keeping them in position. The adjustment of either set of balls is through a little screw resting against the outer surface of the cup B. A locknut is provided in the ordinary way, and a hub cap covers the end of the axle and locknut.



## BRIEF BUSINESS ANNOUNCEMENTS

**Findlay, O.**—H. C. Kelley has sold his garage and agency to K. Zoll.

**Minneapolis, Minn.**—J. S. Spargo recently opened the Motor Car agency at 209 Fifth street, South Minneapolis.

**Detroit, Mich.**—The American Electro-Mobile Co. will not build its new factory until next spring, according to Secretary C. W. Beaumont.

**Brunswick, Ga.**—E. J. Olewine has rented the Levine building on Newcastle street, where he will carry on an automobile agency, in addition to his bicycle business.

**Philadelphia, Pa.**—An application has been made for the incorporation of the Hall Gas Engine Co., a corporation which proposes to engage in the manufacture of gas and oil engines.

**Worcester, Mass.**—The Automobile Dealers' Association of this city is considering the advisability of holding a 3 days' show in December or January. There are seven dealers at present in the association.

**New York City**—E. B. Gallaher, the American manager for the Richard-Brazier automobile, has announced the opening of an information bureau for automobilists in Paris. A suite of rooms has been engaged at 11 Rue d'Alger.

**Lansing, Mich.**—The Reo Motor Car Co. has appointed as local agents for 1906 Daniel J. Wurgis and Frank A. Wall. The local agency includes the counties of Ingham, Eaton, Ionia, Clinton, Shiawassee, and the northern half of Barry.

**Lansing, Mich.**—The Never Miss Spark Plug Co. has added a retail department of automobile supplies and promises to double its business next season. During the past season it claims to have sold 50,000 spark plugs and about 500,000 battery connections.

**Detroit, Mich.**—The C. H. Blomstrom Motor Co. is building an addition to its plant on Clark avenue, which, when completed, will increase the capacity of the plant about three times. The cost of the improvements is about \$25,000, and the capacity will be increased to 1,500 machines a year.

**Detroit, Mich.**—A new addition is being built to the Cadillac company's factory at 1355 Cass avenue. It is entirely of cement and is being put up by the Concrete Steel & Tile Construction Co. It is probable that the building will be ready by December 1. The new factory is to be used for general manufacturing purposes and is to cost between \$75,000 and \$80,000.

**Detroit, Mich.**—The American Electro-Mobile Co., an eastern concern, is to locate here. It is a combination of small concerns. W. L. Woodrow is the president; Frank P. Ray, formerly associated with Edison, engineer, and C. W. Beaumont, secretary and treasurer. The exact location is as yet undecided. It will manufacture a new machine to be operated with an approved storage battery, which will give the machine a traveling radius

of 125 miles without a recharge, it is claimed.

**Portland, Ore.**—Morgan & Wright has opened a branch at 86 Sixth street.

**Pontiac, Mich.**—The Welch Motor Co. has certified to an increase in the capital stock of from \$100,000 to \$250,000.

**Chicago**—Harry W. Cooper, formerly an inside man with Beckley, Ralston & Co., has been made city representative, calling on the retail trade.

**St. Louis, Mo.**—The Maxwell-Briscoe-Chase Co., western agent for the Maxwell car, is opening a branch at 3968 Olive street, under the direction of C. D. Harrington.

**Chicago**—The Royal Automobile Co., 144 Green street, has gone into the receiver's hands, Edwin C. Day, 1335 First National bank building, being the official appointed by the court.

**Akron, Ohio**—The Diamond Rubber Co. has increased its capital stock from \$750,000 to \$3,000,000. It is stated the company will shortly increase its capacity by the erection of a new building at its Akron plant.

**Albany, N. Y.**—A stock company has been formed with a capital stock of \$50,000 for the purpose of building a garage. The location is at the corner of Pine and Chapel streets. The manager is to be C. Sutherland Ransom.

**Concord, N. H.**—Fred L. Johnson, 86 North Main street, runs a garage in the rear of the Eagle hotel. He has been well patronized during the past season by tourists to the White mountains. He has the agency for the Buick cars in New Hampshire.

**St. Louis, Mo.**—H. L. Hull of this city, is reported to be at the head of a syndicate after a concession to establish a plant in the City of Mexico for making all kinds of locomotive boilers, steam engines and automobiles. The company claims to have \$1,000,000 back of it.

**New York City**—Gilsey Brothers have leased for a term of years for Madison Grant, as attorney, the four-story and basement garage at 215-217 West Forty-eighth street, to the Viqueot Co., which will use the property as a show room, repair shop, and garage for the Viqueot car.

**Plainfield, N. J.**—The Spicer Universal Joint Mfg. Co. will move its plant at the Potter works to the Spicer & Hubbard property at Madison avenue and West Third street. The capacity of the present place is much overtaxed. The company manufactures a dust and oil-proof universal joint.

**Pittsburg, Pa.**—Mrs. Mary C. Thaw has sold through the Commonwealth Real Estate Co., the vacant lot on the north side of Center avenue, for \$15,500. The plot was bought by Dr. George Urling, of the Highland Automobile Co., and upon it the company will erect a two-story brick garage, at a cost of about \$25,000. The company is now located at Baum and Beatty streets, and the present buildings will be

sold when the new structure on Center avenue is completed.

**Lynn, Mass.**—Watson Coleman has been put in charge of the new White garage.

**Boston, Mass.**—The Grout Brothers have withdrawn their branch and in the future will dispose of their cars here through an agency.

**Boston, Mass.**—The Morrison-Tyler Co. is about to open its headquarters at 121 Massachusetts avenue, where it will show the Rainier and Maxwell cars, for which it is the New England agent.

**Philadelphia, Pa.**—E. C. Johnson is acting manager of the White branch, at 629-33 North Broad street, formerly occupied by the Banker Brothers Co. Johnson was formerly with the Quaker City Automobile Co.

**Baltimore, Md.**—The Auto Storage & Supply Co., of which James E. Norwood is president, has leased the property at 1416 Madison avenue, and will erect a garage at the rear. The structure will be two stories and 28 by 60 feet.

**Cleveland, Ohio**—The Brew & Hatcher Co. has changed its name to the Hatcher Auto Parts Co., Mr. Brew having retired from the firm. The company has recently improved its facilities for manufacturing automobile parts of all kinds.

**Newark, N. J.**—At the sheriff's sale of the business of George W. Condon, who ran a repair shop at 285 Halsey street, Michael J. Tansey, acting in the interest of the creditors, bid in the stock for \$1,050. Patrick J. Nolan bought the interest in the business for \$1.

**New York City**—Homer & Schultz have had their territory for the National enlarged. In addition to Greater New York and Long Island, it now includes Hudson and Bergen counties in New Jersey, Rockland and Westchester counties in New York, and Fairfield county, Conn.

**Manchester, N. H.**—The International Power Co. has taken over the Amoskeag Fire Engine Co. and will use the plant for the manufacture of automobile fire engines. D. A. Burt, the former manager of the La France Fire Engine Co., will be the manager of the fire engine department.

**Cleveland, O.**—The final organization of the Forest City Rubber Co. was completed at a meeting in the offices of Attorney George C. Wing. William E. Crofut was elected president and treasurer, and James C. Poore, vice president and secretary. Both of these men were formerly connected with the Ohio Rubber Co.

**Fostoria, O.**—The board of trade is endeavoring to secure new industries before the opening of the winter season. The largest of the propositions now before the board is an automobile factory, with a capitalization of \$300,000, to get which it was necessary to subscribe \$50,000 of the preferred stock. The amount has been raised and there is no doubt that the contract for the removal of the plant to this city will be signed before the end of the

week. The company contracts to build and sell 200 machines during the first year.

**Hartford, Conn.**—The Nicholas Auto Transit Co., of Nichols, has filed a certificate of organization.

**East Moline, Ill.**—The Moline Automobile Co. is building an additional building, 40 by 165 feet, necessitated by its increasing business.

**New York City**—Samuel P. Randolph has opened a temporary office for the Auto-car Co., at 152 West Fifty-sixth street, with Jose M. Bellin as manager.

**Dayton, O.**—E. C. Coats, of the Peckham Carriage Co., has withdrawn from the firm and will open an automobile agency on South Main street.

**Cleveland, O.**—The name of the Automobile & Garage Co., of 404 Huron street, has been changed to the Standard Automobile Co., and will handle the Cadillac and Packard.

**Philadelphia, Pa.**—The force of the White branch has been considerably strengthened by the addition of A. E. Jones, formerly representing the Franklin at the Quaker City Automobile Co.

**Peacock, N. H.**—The A. H. Hoyt Co. has the agency for the Oldsmobile and Elmore cars. It has plying two buses between Franklin Falls and Tilton, N. H. One bus has cleared for its owner \$15 per day during the past season.

**Toledo, Ohio**—The Commercial Motor Truck Co. has been incorporated with a capital stock of \$20,000. The company has been in existence for some time and has been manufacturing a gasoline motor truck. The incorporation follows a reorganization of the affairs of the concern.

The company's plant is located on St. Clair street.

**Erie, Pa.**—A new garage is being built by C. R. Dench. A dining room is to be connected with the garage.

**Los Angeles, Cal.**—The National Garage and Repair Co., with F. J. Richards as manager, has opened at 329-331 South Los Angeles street.

**New York City**—The Upton Machine Co., of 17 State street, with works at Beverley, Mass., will in future be known as the Beverley Mfg. Co.

**Stoneham, Mass.**—The Phelps Motor Vehicle Co. is to be succeeded by the Courier Motor Co., which will occupy the old plant and double its facilities for turning out gasoline cars.

**Boston, Mass.**—The Radcliffe Motor Co. has secured the agency for the Frayer-Miller car, which, together with the Stoddard-Dayton, will comprise its line for the coming season.

**Boston, Mass.**—Harry Fosdick and Jewell Dowling are about to open their new garage on Stanhope street. They will handle the Fiat and Studebaker lines, and the National Fabrique motor cycle.

**Oxford, Mich.**—The Detroit-Oxford Automobile Works, located here, will move to Fostoria, O., this week. Lack of capital and the small size of the town is the cause assigned. The factory was started about a year ago.

**Peoria, Ill.**—The Illinois Automobile & Parts Co. is erecting a new garage, 40 by 90 feet, at the corner of Main and Globe streets, where the company will manufacture automobile timers, motors, etc., in addition to maintaining a garage. J. A.

Holdsman, late of the Bartholomew company, is president and general manager.

**Columbus, O.**—The Paxson Motor Co., of Cleveland, has been incorporated with a capital stock of \$10,000.

**Cleveland, O.**—The Auto Power & Appliance Co., of Cleveland, has filed a notice of increase of capital stock from \$25,000 to \$200,000.

**Philadelphia, Pa.**—F. W. Stockbridge, formerly in charge of the branch of the Reo company, has been succeeded by Daniel Cohan, formerly of New York.

**Kingston, N. Y.**—S. D. Coykendall is having erected a brick building, which will be used for the storing of automobiles. The building will be built on West Chestnut street.

**Hartford, Conn.**—Frank H. Harriman, motor manufacturer, has filed a voluntary petition in bankruptcy. Liabilities, \$4,401.06; assets, \$3,115.40. Of the assets, \$2,000 represents 340 shares of the Harriman Motor Works.

**Sodus, N. Y.**—Lane & Parsons, of Hartford, Conn., have closed a deal here for the leasing of the plant of Tripp Brothers, which has been idle for a long time, and April 1 they will open a large tool manufacturing plant. They will also add special machinery for the repairing of automobiles.

**Hammondsport, N. Y.**—G. H. Curtiss' business has been taken over by the G. H. Curtiss Mfg. Co., with a capital of \$40,000. Mr. Curtiss will be the president and manager, the product of the company consisting of engines, both double and single cylinder; complete motor cycles and side cars.

## RECENT INCORPORATIONS AND CAPITAL INCREASES

**Wilmington, Del.**—The Universal Power & Promotion Co. has been incorporated with a capital stock of \$100,000 to manufacture automobiles under patents held by C. A. A. Taylor and E. O. Brown, both inventors, of Wilmington.

**Pontiac, Mich.**—The Hess-Pontiac Spring & Axle Co. has been incorporated with a capital stock of \$145,000 to succeed the Vehicle & Improvement Co. and the Pontiac Axle Co. The company will make a specialty of automobile springs.

**Cleveland, O.**—The Glenville Garage & Co. has been organized to handle automobiles and parts. Capital stock, \$10,000.

**New York**—The Olborah Auto Co. has been incorporated with a capital stock of \$3,000.

**Albany, N. Y.**—The W. J. Willard Co., to engage in the manufacture of automobiles, has been incorporated with a capital stock of \$100,000.

**Boston, Mass.**—The Technical Automobile School of New England has been incorporated with a capital stock of \$5,000.

**New York City**—The 35 per cent Automobile Supply Co. has been incorporated to deal in and manufacture automobile supplies. Capital stock, \$40,000.

**Troy, N. Y.**—The Auto Exchange of Albany and the Troy Garage Co. have filed articles of incorporation with the county clerk, showing that the capital stock of \$500 have in both cases been paid in.

**Owego, N. Y.**—The New Amsterdam Motor Co. has been incorporated with a capital stock of \$75,000.

**Brooklyn, N. Y.**—The Prospect Construction Co. has been incorporated to maintain an automobile garage. Capital stock, \$6,000.

**Nyack, N. Y.**—The Rockland Motor Co. has been incorporated with a capital stock of \$5,000. It will sell automobiles and maintain a general garage business.

**Detroit, Mich.**—The Modern Motor & Machine Co. has been incorporated with a capital stock of \$15,000.

**Montreal, P. Q.**—The Automobile Import Co. has been incorporated with a capital stock of \$20,000, to manufacture all kinds of automobiles, vehicles, etc.

**Newark, N. J.**—The Motor Vehicle Co. has been incorporated with a capital stock of \$5,000, to manufacture automobiles, vehicles, etc.

**Trenton, N. J.**—The Automobile Speedway Co. of New Jersey, of Jersey City, has been incorporated with a capital stock of \$100,000.

**Columbus, O.**—The Auto Car Co. of Cincinnati has been incorporated with a capital stock of \$25,000. The company will build a concrete garage at Eighth and Sycamore streets.

**New Brunswick, N. J.**—The Middlesex Motor Co. has been incorporated with a capital stock of \$50,000. The company will construct automobile garages and also lease and build automobiles.

**Cleveland, O.**—The Glenville Garage & Machine Co., of Cleveland, has been incorporated with a capital stock of \$5,000.

**Chicago**—Incorporation papers have been granted the Biddle-Murray Mfg. Co., which will manufacture automobiles. The capital stock is \$10,000, the incorporators being Ralph M. Shaw, J. D. Black and Edward C. Maher.

**Moline, Ill.**—The Deere-Clark Motor Co. has been incorporated by C. E. Drury, R. S. Blakemore and W. E. Clark for the purpose of manufacturing motor cars; capital stock, \$100,000.

**Baltimore, Md.**—The Sheddan Mfg. Co. has been incorporated. The company is to make air cushions and to deal in all kinds of vehicles, in addition to maintaining a garage. The capital stock is \$15,000.

**Ossining, N. Y.**—Among recent incorporations is that of the Hutchinson Electric Horn Co., with a capital stock of \$20,000.

**Newark, N. J.**—The Greene Motor Car Co., of Newark, has been incorporated with a capital stock of \$100,000.

**Omaha, Neb.**—The Deright Automobile Co. has been incorporated with a capital stock of \$50,000. The company has a new garage in course of construction at Nineteenth and Farnum streets.

**Lansing, Mich.**—The Motor Car Co., of Detroit, has been incorporated with a capital stock of \$150,000.

**Trenton, N. J.**—The Summit Garage has been incorporated with a capital stock of \$25,000, and will engage in the manufacture and renting of automobiles, motor vehicles and bicycles.

**Albany, N. Y.**—The Brewster Automobile Co. has been incorporated with a capital stock of \$10,000.

**Guthrie, Tex.**—The Southwestern Transit Co. has been incorporated with a capital stock of \$35,000 to operate an automobile line. The incorporators are E. R. Ames of Prague, and Shirley A. Bradish and Thomas J. Lowe of Guthrie.

**Guthrie, Tex.**—The Automobile Tire Repair Co., of Guthrie and Chicago, has been incorporated with \$10,000 capital by W. F. Maloney, Robert A. Wells, Charles R. Tichenor and M. M. Chesrown, of Chicago, and G. V. Pattison and H. W. Pentecost, of Guthrie.

**Quincy, Ill.**—The Quincy Automobile Co. has been incorporated for \$50,000 to manufacture automobiles and parts. J. W. Cassidy, H. Chatten and W. H. Govert are the incorporators.

**Charlotte, Mich.**—The Dolson Automobile Co. has been incorporated with a capital stock of \$100,000.



SYRACUSE, N. Y., LIVERYMAN SEES TREND OF AFFAIRS AND PREPARES TO STAY IN BUSINESS

**Takes on the Glide**—The Holmes-Schmidt Motor Co., 1502 Michigan avenue, has taken the Chicago agency for the Glide.

**Located in Erie**—Jacob Roth is erecting a \$70,000 garage at Erie, Pa. It will be a two-story affair in the center of the town, the building being of steel construction.

**Whitney Promoted**—R. A. Whitney, a general salesman for the Glide the past year, has been appointed sales manager in charge of the Glide agencies by the Bartholomew company.

**Going to Paris**—J. S. Josephs, manager of the Auto Import Co., New York, will sail on the 21st to attend the Paris show and see to the shipment of the entire Rochet-Schneider exhibit, which he has bought outright for display at the Madison Square garden show.

**Gives Glad Hand**—The Rhode Island Automobile Club on Thursday night last gave a farewell smoker to A. E. Hughes and W. J. Foss, who have secured the Philadelphia agency for the Cadillac and Pierce Arrow automobiles and have opened an establishment at the northeast corner of Broad and Race streets in the Quaker city.

**Pope-Hartford Test**—A tour which will test out the new Pope-Hartford four-cylinder car and which will also be a selling expedition was commenced on Sunday by Wilbur C. Walker, of the Pope company's Hartford office. Walker will drive the car to Springfield, Troy, Albany, Utica, Syracuse, Rochester, Buffalo, Cleveland, Erie, Pittsburg, Toledo, Indianapolis, Chicago and possibly to St. Louis. N. P. Bernard is chauffeur and accompanying Mr. Walker are F. L. Buckbee and W. H. Kellar, salesmen of the Pope company.

**Gives Up Branch**—The Pope Mfg. Co. has recently discontinued its branch at Providence, R. I., and disposed of its stock of cars and parts there to the Rhode Island Motor Car Co., which will have the agency for the Pope cars the coming season. The Pope building on Snow street will soon be vacated and the greater portion of the machinery and fittings shipped to Hartford. Secretary Wilbur C. Walker of the company, speaking of the changes, states that it is now the policy of the company to discontinue, rather than increase its branches throughout the country, as the demand is now almost greater than the supply, and the company has no

difficulty in disposing of its allotments to its agencies.

**Now Renault Secretary**—H. B. Miller, formerly in charge of the sales department of Smith & Mabley, is now the secretary of the Renault American branch.

**E. V. C. Co. at Show**—By the arrangement of space at the New York show the Electric Vehicle Co. is to have three exhibits—gasoline cars in the main hall, electrics in the restaurant, and delivery wagons and trucks in the basement.

**Plant Destroyed by Fire**—The plant of the Central Mfg. Co., of Connersville, Ind., maker of buggy and automobile bodies, was totally destroyed by fire last week. The loss is estimated at \$60,000, with \$30,000 insurance. The factory employed 150 men.

**Hungary Hungry for Cars**—The trade in automobiles in Hungary, although little developed as yet, has lately made a distinct advance. The local industry is not yet in a position to compete against foreign importations, among which American cars are figuring in the import returns.

**Spreading Out**—The New Process Raw Hide Co., of Syracuse, N. Y., has just completed a two-story brick addition, which gives it 10,000 feet more floor space. It is also installing additional turret lathes, drills, grinders, spur gear cutters, bevel gear planers and other machinery. It is expected that this will increase the company's capacity 75 per cent.

**Delayed by Strikers**—Strikes in the building trades now promise delays in the new garages building in Hartford. S. A. Miner does not believe that he will get into his new quarters until April. The new addition to the E. V. Co.'s plant has been ready for 2 months, but the bridge workers' strike has prevented the erection of the roof, the girders for which are now on hand.

**Franklin Agents**—Planning for the 1906 campaign, the Franklin people have again closed with R. C. Hamlin to represent them in Southern California, Gus Boyer in San Francisco, A. R. Bangs in Boston, the Quaker City Automobile Co. in Philadelphia, Cook & Stoddard in Washington, D. C., and the Standard Automobile Co. at Pittsburg. The metropolitan district will be cared for by the Decauville Automobile Co. Sales Manager C. A. Benja-

min is now in Chicago debating whether or not it would be advisable to open a branch or continue with an agency.

**Page's Trip**—Carl Page, manager of the New York branch of the White Sewing Machine Co., will sail for Europe on Saturday with his mother. After a tour of Italy and southern France he will visit the Paris show.

**Hurlbert Enthusiastic**—W. H. Hurlbert, manager of the New York branch of the Packard Motor Car Co., on the basis of present demand and orders, expects to dispose of fully half of the 1906 allotment by January 1. This will be but a repetition of his experience with the Packards during the past season.

**Now in Baseball**—L. A. Mitchell, associate of Guy Vaughan in the 1000-mile record ride at the Empire track, companion of A. W. Church on the Glidden tour and salesman for some time in the employ of the Decauville Automobile Co., has resigned his position with the Decauville company to accept a position as secretary of the New York baseball team.

**Hay Ford's Man**—Thomas Hay, formerly of the Hayden Automobile Co., of Chicago, has been named as manager of the Ford branch in the windy city. C. C. Meade, temporarily in charge, has gone to the Pacific coast on a business trip. The Ford people will locate permanently at 1440 Michigan avenue as soon as the building which is to be built for them is completed.

**Italians Busy**—Reports from Milan, Italy, say the shipments to New York by one firm the past year, ended June 30, amounted to over \$124,000. It is reported that this same firm expects to export more than double that amount to New York this year. Some of the Italian firms announce they have more orders than they can fill, orders being received only on condition that they be completed at some future time.

**Department Store In It**—Bacon, Chappell & Co., of Syracuse, N. Y., who conduct a department store, will enter the automobile business next season, and have arranged for the agency of the Rambler. They expect to secure some good location near the business section and conduct an up-to-date garage. The department will be managed by William Cranston, formerly with R. M. Cornwall & Co., in South Salina street. The Cornwall company will go out of the business at the close of the present season and devote its attention to the manufacture of gasoline engines.

**Progressive Livery Man**—John W. Cronin is a Syracuse, N. Y., liveryman who recognized the signs of the times and proved equal to the demands which progress made upon him. At the beginning of the 1905 season he erected a garage by the side of his livery building and has conducted both successfully. If anything the automobile business has encroached somewhat on the other branch, for Cronin this fall and winter will put into service two automobile hacks. Next season he expects to have a sightseeing vehicle and several automobiles for rental purposes. He took the agency for the Reo car, which he will continue next season. Cronin started in the livery business in a small way in 1878,

and from that time the business has increased steadily, until it is now the largest in Central New York.

**Ollier Changes**—L. J. Ollier, formerly with the Cadillac and later with Devlin & Co., is now in charge of the sales department for Ralph Temple, Chicago, who handles the Reo, Panhard and Premier.

**Has Changed**—F. S. Duesenberg announces he is no longer connected with the Iowa Auto & Supply Co., of Des Moines, Ia., having gone into business for himself at 915 Grand avenue under the name of the Duesenberg Automobile Co.

**Old Line Suits**—The Auto Shop of Paterson, N. J., has signed its old line for 1906. This includes Columbia gasoline and electrics, the Knox and White Steamer. President Andrew T. Fletcher may take on one more line which does not conflict with the other three.

**Kelsey Moves**—Cadwallader W. Kelsey, Philadelphia agent for the Maxwell car, left the Quaker city last week to assume his new duties at the Maxwell factory at Tarrytown-on-the-Hudson, N. Y., where he will be the general sales manager. He will be succeeded in Philadelphia by William P. David, well known throughout New England in connection with the Maxwell line of cars.

**Kiser Bobs Up**—Earl Kiser is expecting to break into the trade end of the game in Dayton, O., now that he has fully recovered from the Cleveland accident. The rosy-cheeked little driver is able to use his artificial leg without the use of a cane, and can drive an automobile in a clever manner. He will start in business as soon as he finds a location, taking with him John S. Johnson.

**Signs Long Lease**—C. B. Rice, New York agent for the Baker electrics, has signed a 10-year lease for a big building now nearing completion at Broadway and Seventy-seventh street, which he will use as an exclusive garage for electrics. It will have 35,000 square feet of floor space, sufficient for the storage of 300 machines. The present salesroom at Broadway and

Fifty-ninth street will be continued for the exclusive exploitation of the Baker product.

**Buy In**—Mohler & De Gress have purchased the plant of F. A. Seitz at Long Island City, N. Y., and will enlarge the business.

**Sixth Season**—The Toledo Motor Car Co. will again handle Pope-Toledo cars next year, having handled them for the past five seasons.

**Breaks in Jersey**—The Greene Motor Car Co., of Newark, N. J., has taken northern New Jersey for the Locomobile and the Smith & Mabley line of imported cars—the Mercedes, Panhard and Renault.

**Renew With Henshaw**—During the past week Harrington's Automobile Station, of Worcester, Mass., and C. K. Smith, New London, Conn., have renewed their contracts with C. S. Henshaw, the New England Thomas Flyer representative.

**In a Merger**—The American Motor & Cycle Co., of Battle Creek, Mich., is the result of a merger of the Currie Motor Cycle Co. and the Losey-O'Riley Co. The place will be located at 35 East Main street. C. G. Currie is president of the new company.

**Stern Sells Out**—Emil Stern, associated with Norris M. Mason in the American agency of the Leon Bollee cars, has sold out his interest to his partner, who will continue the business at 32 West Thirty-second street, New York. Mr. Stern will shortly return to France and again be associated with the Leon Bollee concern.

**New in Chicago**—The Kelley-Hunter Co., new in Chicago trade, has taken the Northern agency for Chicago and surrounding territory. The president of the company is W. M. Thompson, with Paul Kelley, of the firm of Kelley, Maus & Co., treasurer. The active members of the agency are Clinton Hunter, secretary and manager, and W. G. Tennant, vice-president. The latter has been connected with the Chicago branch of the Winton and later with the Haynes people. The new company is located on the second floor at 1449 Michigan avenue, but after February 1, when the

McDuffe Automobile Co. moves out, it will occupy the entire building.

**Fay Goes with Ford**—Charles E. Fay has concluded a contract with the Ford Motor Car Co. whereby he is to assume the management of the Boston branch.

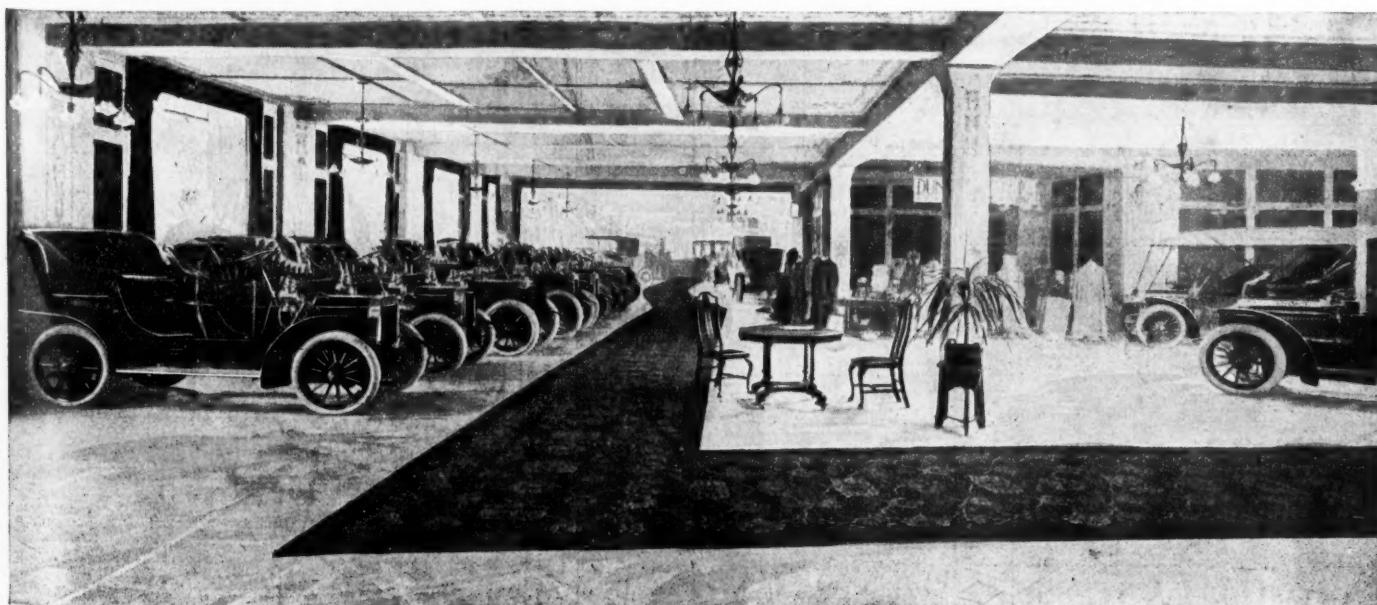
**Unwin Connects**—Harry Unwin, former manager of the Harrolds Motor Car Co., of New York, has taken the superintendence of the selling department of the metropolitan district branch of the White Sewing Machine Co. under Carl Page, manager.

**Up a Notch**—A prominent stove manufacturer confesses that the automobile industry in Detroit has passed the stovemakers in the Michigan city. For the year just ended the manufacturers of car wheels led with a total output worth \$13,000,000, with the motor trade next with \$11,000,000.

**Argyll Salesroom**—The British trade is proud of the new London depot for the Argyll cars, opened at 17 Newman street, Oxford street, W. In addition to the handsome display of cars and a repair shop, another dealer, Alfred Dunhill, has a branch establishment in the place for the purpose of retailing his motor clothing.

**Packard Prompt**—The Packard Motor Car Co. reports that in October it commenced the delivery of its 1906 Packard 24, both touring car and runabout, and that it expects to keep as closely to its shipping schedule as it did with model N, which scarcely varied a day throughout the season. The new model worked out so well that the Packard purchasing department was able to send out its orders 4 months ago.

**Big Order Half Filled**—More than half of the big order of the new electric broughams building for the New York Transportation Co. has been completed by the Electric Vehicle Co., of Hartford. The rig is fashioned somewhat after the English type of brougham, but is driven with twin motors and side chains and is fitted with solid tires. The resistance controller is mounted beneath a hood, readily accessible, and the battery is underslung.



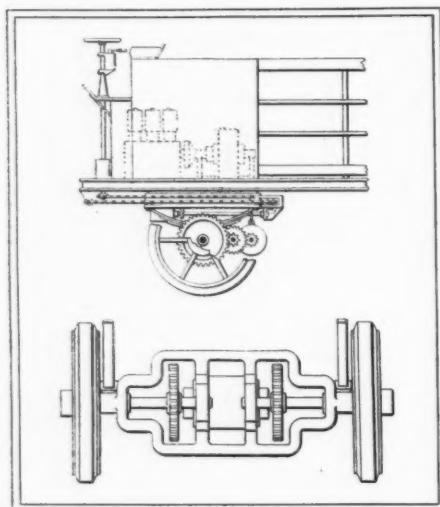
SAMPLE OF A MODERN MOTOR CAR SALESROOM IN LONDON, WHERE THE ARGYLL CARS ARE EXHIBITED AND SOLD

## Current Automobile Patents



**Combination Truck**—No. 803,016, dated October 31; to Elmer P. Morris, East Orange, N. J.—The invention relates to a commercial truck, with power furnished by a gasoline engine. This engine furnishes the power for driving an electric generator and the generator in turn supplies current for electric motors on each of the front wheels. The front wheels, besides serving to propel the truck, are used for steering, the feature of the steering arrangement being that an electric motor does the work of turning the steering wheels. A vertical steering column with wheel is located in the front of the driver and on the bottom of the column is a sprocket connected by chain belt with the steering motor, the connection being such that a movement of a steering wheel to the right brings the electric steering motor into operation and turns the wheel in that direction, and an opposite movement of the hand wheel gives the opposite turn to the steering road wheels. The amount of turn given the road wheels is dependent on the amount of turn given the steering wheel, the speed of the electric motor being proportioned to the turn of the steering wheel. The same inventor has another patent, successively numbered, relating to the construction of the axles of his truck. The axle is a vertical framework of metal divided into three parts. Through the center of it pass the half axles carrying each of the road wheels, and on each half is a large spur gear to which the motors are connected.

**Tire Cover**—No. 803,326, dated October 31; to James M. Carpenter, Millersburg, O.—A novelty is presented in the device referred to in this patent, which is a cover for the tread of pneumatic tires for automobile wheels. The tread consists of metal links, pivoted together, each link having a concave under surface for resting on the tire tread and an upper surface of a ridge-like projections placed crosswise of the link and reaching across the tire tread. These projections are designed for overcoming slipping on muddy roads or in snow. Every seventh link has short arms on either side extending radially to the edge of the steel rim, where a clevis, which encircles the wheel rim and rests against one of the spokes, has its ends pivoted. The use of the clevis is not only to retain the tread in position but to prevent its slipping on the tire. No arrangements are provided for

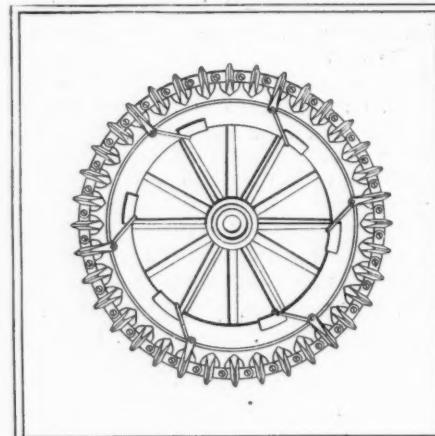


MORRIS' COMMERCIAL TRUCK

preventing its slipping on the tread when the wheels are reversing, but having it clamped to the spokes would serve for this.

**Folding Foot Board**—No. 802,995, dated October 31; to Harry A. Knox, of Springfield, Mass.—This invention is a foot board for use on the front seat of a runabout car, and is so constructed that when the seat is not in use, the foot board swings upward and forms the front of the car body. This swinging movement is accomplished by having the foot board hinge at the bottom of the frame work of the car and a rigid lever bolted to the center of the foot board at either end. Connected with the lever is a link, attached to the body which is so connected as to give a toggle joint arrangement to the other parts.

**Mixture Regulator**—No. 803,289, dated October 31; to Thomas B. Jeffery, of Kenosha, Wis.—The device referred to relates to the supplying of mixture for a gasoline engine. A pipe leads from the carburetor to the inlet valve and in this pipe, intermediate of these parts, is an inlet valve for admitting



CARPENTER'S TIRE COVER

outside air into the pipe. Both the gas inlet valve to the motor and the air in the valve are controlled by a ring beneath the steering wheel, the connection between the two valves and this ring being such that the air inlet valve opens as the gas inlet closes and a trip is furnished for disengaging the air inlet valve, permitting it to be closed without reversing the gas inlet valve movement.

**Flat Inner Tube**—No. 803,345, dated October 31; to Thomas B. Jeffery, of Kenosha, Wis.—The invention is a pneumatic tire in which the ordinary round inner tube is replaced by a flattened one, the construction of the tire casing giving it this shape. On the sides of the wheel rim are recesses in which the lips on the outer casing repose and on the tread part are three reinforcements to protect the tread and prevent side slipping. Over the outer face, or tread, of the wheel rim is a plate, held by screws, for preventing the wheel rim injuring the inner tube.

**Combination Tire**—No. 803,500, dated October 31; to Winnifred J. and James R. Mitchell, of Lyons, Mass.—The inventors have what can be called a combination tire, being a pneumatic tire protected by a circle of solid rubber. The tread of the wheel rim is grooved to receive the air chamber and on either sides of it are circular ring flanges bolted to the sides of the rim and having shoulders on the outer edges, on which rests an ordinary solid rubber tire. The air chamber is thus enclosed between the metal rims on either side and the rim and the solid tire, the latter being retained by bolts passing through the flange rings. The same inventors have another design

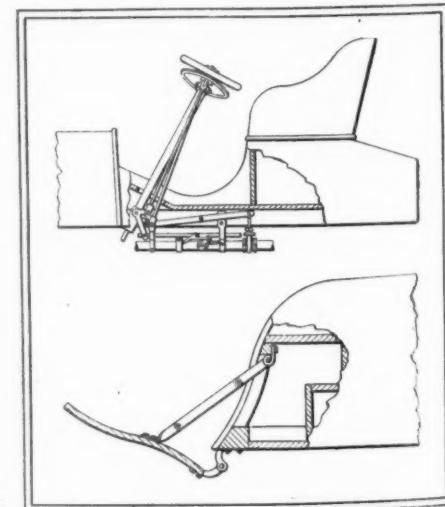
of combination tire following similar lines of construction, except that a rubber ring encircles the air chamber and encircling and enclosing the ring is a grooved tread part, held to the ring flanges by cross bolts and, of course, nuts.

**Single Tube Tire**—No. 803,510, dated October 31; to William A. Sankey, of Sutton, England—The inventor has a single tube automobile tire which is slotted like the ordinary tire casing and has clincher style of lips for retaining it in position. As an aid to the tire lips, bolts pass through the rim radially, the heads, within the tire, resting on a broad circular band that rests on the rim and overlaps on the tire lips, thereby holding them and serving also to retain the air.

**Fisk's Tire**—No. 803,053, dated October 31; to Henry G. Fiske, of New York city—in his pneumatic tire, the air tube is of inverted U shape, and to render the tire practically puncture proof a thick felt tread is used. The entire casing is almost double as heavy as the ordinary casing and the tire rests between opposing flanges, which are aided in retaining it in position by a center wire, as used on buggy wheels. The air valve does not pass through the wheel rim but is located in the side and passes through on the flanges.

**Tire Fastening**—No. 802,703, dated October 24; to Thomas Midgley, of Columbus, O.—The invention relates to the fastening of a pneumatic tire to a rim, the tire having clincher rims but the rim of the wheel made flat with a metal ring with low radial flanges surrounding it. The tire does not rest firmly on the rim, but rather on two slightly crescent-shaped pieces, one under each tire lip. Between these pieces and the tire is a strip of leather or rubber, filling the spaces between the crescents and providing a floor for the tire. To hold the tire in place two endless rings are used, one on each side of the tire, each ring of wedge cross section so that the edge of the wedge can be forced between the low flanges on the wheel and the crescent pieces, thereby pushing the crescents closer together, forcing the leather strip up against the air tube. The larger ends of the wedge-shaped rings bear against the tire sides. The tighter the tire is inflated the greater will be the pressure on the side rings, and consequently the greater downward pressure on the crescent pieces, thus holding all parts rigidly in place.

**Semi-Pneumatic Tire**—No. 802,806, dated October 24; to Henry G. Fiske, of New York city—the tire described is not strictly a pneumatic, in that the air chamber is not more than half the size of the ordinary air tube, and the tire casing is double the ordinary thickness. The air tube resembles a figure 8, placed crosswise in the center of the casing with the space above and below it filled with cross layers of rubber and canvas to resist puncturing. The casing part, instead of being one or two thicknesses of rubber and canvas vulcanized together, is an outer tube of rubber with four or five smaller leather or canvas tubes within it. The tire is a single tube fastened to regular trough-shaped rims.



JEFFERY'S CONTROL—KNOX'S FOOT BOARD

# ROADSIDE TROUBLES

*An Ounce of Prevention*  
Copyrighted by the American Motor League

By Chas. E. Duryea

**WHEN THE VEHICLE STOPS**—Coming events usually cast their shadows before, and the experienced man in most cases has warning of trouble before it happens. If he heeds this warning he remedies the difficulty and prevents the trouble. To the inexperienced man this is not possible, for he does not hear or feel the warning, because he has not learned what is right and what wrong, or if he is conscious of it he may not be able to locate it, so that in many cases his roadside troubles begin when the vehicle stops. If this happens when climbing a hill, do not withdraw the clutch until the brake is set. As the clutch is withdrawn make sure that the brake holds the vehicle. Withdrawing the clutch before applying the brake, or with a faulty brake, may result in running down hill backward. When the low or hill-climbing gear is engaged, the clutch will hold the vehicle safely.

With the clutch released, apply the starting crank to see if the motor turns freely. If it does, go through the starting operation and see if it will start. If it does, the cause of stopping is not in the motor, and must be looked for elsewhere, unless the motor was actually overloaded and stopped because of sheer inability. If it does not start, see that the spark is all right, then that there is fuel, and neither too much nor too little. If it still refuses, the mechanical part, like the timing of the valves and the spark, should be examined. These, however, are not likely to be wrong without the trouble being apparent. If the motor is not free, it is either overheated or has a seized bearing, as explained in the paragraph on lubrication. If overheated it will usually loosen on cooling. Work oil freely on to the tight piston and examine the water circulation. Simple things sometimes cause trouble. A loose wire in the electric system, a loose joint in the fuel pipe, an empty gasoline tank, a stopped air vent therein—all cause roadside stops, and even experts look long and hard sometimes before locating the trouble.

Accidentally knocking off the switch, may, because so simple and unlooked for, cause a longer stop than a broken chain, which is found at once and repaired. Wires and similar connections should not be hidden, but should be kept in plain sight, as far as possible, where, by a single glance, one may see whether or not they are in proper condition. Each morning one should practice giving the vehicle a rapid inspection, covering all vital parts. Practice in making this inspection enables it to be made rapidly and thoroughly on the road, and thus assists in locating road troubles quickly.

Having determined that there is no fault with the motor, next move the vehicle. One should frequently do this, so as to

know whether the vehicle runs easily or not. He will then know whether or not the stoppage was caused by some fault in the bearings, the brakes, the steering, or similar parts. A tight bearing may actually stop the vehicle and will quickly give the impression that one has a weak and faulty engine. A brake band rubbing will do likewise. Many an automobile user today is paying needlessly large gasoline bills, to say nothing of increased repairs, simply because his brakes continually drag. If the steering wheels are not parallel, the tires slip sidewise on the ground, which soon wears them flat and also adds considerably to the labor of the motor. Of course, if the difficulty is found in the vehicle it must be remedied. If neither in the motor or vehicle, next examine the transmission. A stripped gear, a sheered key, a broken clutch lever, or some similar cause may permit the motor to run and yet fail to drive the vehicle, but in this, as in other things, reasoning from cause to effect, with careful inspection, will locate the trouble, and having located it, in most cases there will be some temporary expedient by which it can be patched up sufficiently to permit progress.

**Fix Before Leaving**—Again, we repeat, a stitch in time saves nine, and roadside troubles can be largely avoided by attending to defects when they first show signs of existence. If the motor is working badly do not wait for starting troubles, but fix it before leaving it. If everything is in good order, starting troubles will seldom exist. At the risk of being thought tiresome, we repeat that the ignition should be carefully inspected. Many an expert looks for trouble everywhere else, assuming that the ignition is all right, when as a matter of fact, the ignition only is to blame. A spark may look large and yet fail to do its duty. Many a motor has been condemned unjustly because of faulty spark. Many a man has assumed, because he has just paid for a set of fresh batteries, that the spark must be all right. Batteries lose their strength easily. They sometimes become valueless standing on the shelves. A file or screw driver accidentally laid on top will in a few minutes run the life out of them. Many things of this kind can damage the spark. Therefore, above all things, make sure of the spark in starting trouble, and if trouble still continues, do not waste much time elsewhere until you have made doubly sure that the spark is right. With a magneto or dynamo there is no chance to run down

**EDITOR'S NOTE** — This is the sixteenth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

over night, and the spark that gave satisfaction in the evening may with reasonable assurance be expected to do likewise in the morning.

**Tool Kit**—In trouble, one's best friend is the tool kit. Many things can be accomplished without tools, but tools are labor-saving devices of the most pronounced kind and every vehicle should be equipped with an outfit sufficient to adjust, or even tear down and assemble the complete vehicle. Some vehicles require special wrenches, whereas others are so designed that almost everything can be manipulated with common tools, such as the monkey wrench and screw driver. The user should know what tools his vehicle needs and provide accordingly. For unhandy nuts, end wrenches are advisable. One or more pairs of pliers, suitable for cutting and bending wire, and also for holding round as well as flat objects, are extremely handy. A cold chisel, a file, a punch for knocking out cotter pins or chain rivets and several sizes of iron wire should be carried. The size used on ordinary baled hay can be picked up at almost any stable and is very handy. Broom wire is also usually easy to find. This is worth remembering when there is something to be tied together. A gasoline squirt can, a supply of cylinder oil and a can of thinner oil, commonly termed engine oil, should always be at hand. It is also advisable to have a small can of graphite and one containing heavy grease. A tire pump will be included without doubt. If batteries are used an ammeter or voltmeter, or both, are decidedly valuable. For storage batteries a densimeter is sometimes needed, but this is seldom carried on the road. A similar device for testing gasoline is also a valuable addition to one's tool outfit. Some waste for cleaning purposes and with some vehicles a squirt gun for handling oil is advisable. A tire repair outfit ought to be a constant companion and this should include a ball of strong cord, 1-16 to 1-8 inches in diameter, with which a bursted tire may be wrapped in place. After wrapping this cord ought to be protected by wrapping it with tire taps, which keeps out the dirt and prevents the cord from wearing, while the cord furnishes the strength. There are short shoes provided for this purpose that can be laced in position on the outside of the tire, or a canvas strip may be placed around the air tube and the ends either laced together, or drawn out over the edges of the rim, where the inflation will generally hold them. This device will prevent the air tubes from being damaged, but is more trouble than the outer covering. A wrapping of tire tape must be provided in any event to avoid damage to the canvas and inner tube. The tool kit should also include any extra parts that may seem advisable to carry for the purpose of replacing those that are known to be likely to give trouble, as, for example, extra spark plugs, extra insulations, some insulated wire and light springs, such as valve springs, that may break without warning. The manufacturers of a vehicle or any user thereof will usually willingly advise on these points but every car driver must be his own mechanic for roadside troubles and repairs.



#### OFFICERS

ISAAC B. POTTER, President.  
Potter Building, New York.  
CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.  
JOHN A. HAWKINS, Second Vice-President, Pittsburg, Pa.  
FRANK A. EGAN, Secretary, 132 Nassau St., New York.  
FREDERICK B. HILL, Treasurer, 32 Binford St., Boston.

National Headquarters  
Vanderbilt Building, New York

#### THIS LEAGUE

Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

#### APPOINTMENT

Under the provisions of section 1 of article 1 of the by-laws, Dr. John A. Hawkins, of Pittsburg, has been appointed to fill the office of vice-president of the league in place of S. W. Merrihew, resigned. Mr. Merrihew was one of the founders of the organization, and it is to be regretted that his personal business is so exacting as to prevent his giving further attention to league work. Dr. Hawkins, the new vice-president, has displayed the greatest ability in the building up of the Pittsburg board of consuls, and the present activity of the league in western Pennsylvania is inspired by our Pittsburg members, among whom Dr. Hawkins is a zealous leader.—ISAAC B. POTTER, President.

#### STATE DIVISIONS

This week will conclude the announcement of districts for most of the remaining important states. Those hereafter to be announced will follow from week to week as conditions require. The time is now at hand when the active efforts of many members will be called upon to take up and carry forward the work, which has hitherto been attempted in a most inadequate way by the officers at national headquarters. Plans are being completed for the election of officers for the important state divisions and the detail work of organization will be committed to these officers as soon as they are chosen.

#### KANSAS DIVISION

District 1, counties of Brown, Doniphan and Atchison; district 2, counties of Jefferson, Leavenworth, Wyandotte, Johnson and Douglas; district 3, counties of Miami, Franklin, Linn and Anderson; district 4, counties of Bourbon, Allen, Neosho, Crawford, Cherokee and Labette; district 5, counties of Wilson, Montgomery, Chautauqua, Elk and Cowley; district 6, counties of Butler, Greenwood, Woodson, Coffee, Chase, Lyon and Osage; district 7, counties of Shawnee, Wabaunsee, Jackson, Pottawatomie, Geary, Morris and Dickinson; district 8, counties of Riley, Clay, Gloud, Republic, Washington, Marshall, Nemaha; district 9, counties of Jewell, Mitchell, Osborne, Smith, Rooks and Phillips; district 10, counties of Marion, McPherson, Rice, Ellsworth, Saline, Lincoln and Ottawa; district 11, counties of Harvey, Reno, Kingman, Sedgwick, Sumner and Harper; district 12, counties of Stafford, Pawnee, Hodgman, Ford, Edwards, Pratt, Kiowa, Clark, Comanche and Barber; district 13, counties of Bar-

ton, Rush, Ness, Trego, Ellis and Russell; district 14, counties of Graham, Norton, Decatur, Sheridan, Rawlins, Thomas, Cheyenne and Sherman; district 15, counties of Gove, Logan, Wallace, Greeley, Wichita, Scott and Lane; district 16, counties of Finney, Gray, Meade, Seward, Haskell, Stevens, Grant, Kearney, Hamilton, Stanton and Morton.

#### COLORADO DIVISION

District 1, counties of Arapahoe, Douglas and Elbert; district 2, counties of Teller, Fremont, Custer, El Paso and Pueblo; district 3, counties of Weld, Logan, Sedgewick, Phillips, Morgan, Washington and Yuma; district 4, counties of Kit Carson, Cheyenne, Kiowa, Lincoln, Otero, Bent, Prowers and Baca; district 5, counties of Montrose, San Miguel, Ouray, Dolores, San Juan, Montezuma, La Plata, Hinsdale, Mineral, Archuleta, Conejos, Rio Grande, Costilla, Huerfano, Lasanimas; district 6, counties of Saguache, Gunnison, Chaffee, Park, Lake, Eagle, Summit, Garfield, Mesa, Delta and Pitkin; district 7, counties of Rio Blanco, Routt, Larimer, Grand, Boulder, Gilpin and Clear Creek.

#### ALABAMA DIVISION

District 1, counties of Mobile, Baldwin, Escambia, Covington, Conecuh, Monroe, Washington, Clarke, Choctaw, Marengo, Wilcox, Butler, Dallas and Autauga; district 2, counties of Geneva, Henry, Dale, Coffee, Crenshaw, Lowndes, Elmore, Montgomery, Pike, Bullock, Russell, Macon and Lee; district 3, counties of Sumpter, Greene, Pickens, Tuscaloosa, Hale, Perry, Bibb, Chilton, Shelby, Jefferson, Walker, Fayette and Lamar; district 4, counties of Coosa, Tallapoosa, Chambers, Randolph, Clay, Talladega, St. Clair, Calhoun, Cherokee, Etowah, Blount, DeKalb, Marshall, Cullman, Morgan, Madison, Jackson, Limestone, Lauderdale, Colbert, Lawrence, Franklin, Winston and Marion.

#### TENNESSEE DIVISION

District 1, counties of Crockett, Gibson, Dyer and Weakley; district 2, Fayette, Shelby, Tipton, Haywood and Lauderdale; district 3, Carroll, Humphreys, Benton and Henry; district 4, Hardeman, McNairy, Hardin, Chester, Decatur, Henderson and Madison; district 5, Dickson, Houston, Cheatham, Stewart and Montgomery; district 6, Hickman, Perry, Lewis, Wayne and Lawrence; district 7, Davidson, Robertson, Macon, Sumner, Wilson and Trousdale; district 8, Williamson, Maury, Marshall, Giles and Lincoln; district 9, Rutherford, Cannon, Bedford, Coffee, Moore and Franklin; district 10, Clay, Pickett,

Overton, Jackson, Smith, Putnam, White, Van Buren, Warren, Morgan, DeKalb and Grundy; district 11, Cumberland, Loudon, Roane, Hamilton, James, Meigs, Rhea, McMinn, Bradley, Bledsoe, Sequatchie and Marion; district 12, counties of Campbell, Scott, Union, Claiborne and Anderson; district 13, counties of Jefferson, Sevier, Blount, Monroe and Polk; district 14, counties of Hancock, Grainger, Hamblen, Cocke, Unicoi, Carter, Johnson, Sullivan, Hawkins and Greene.

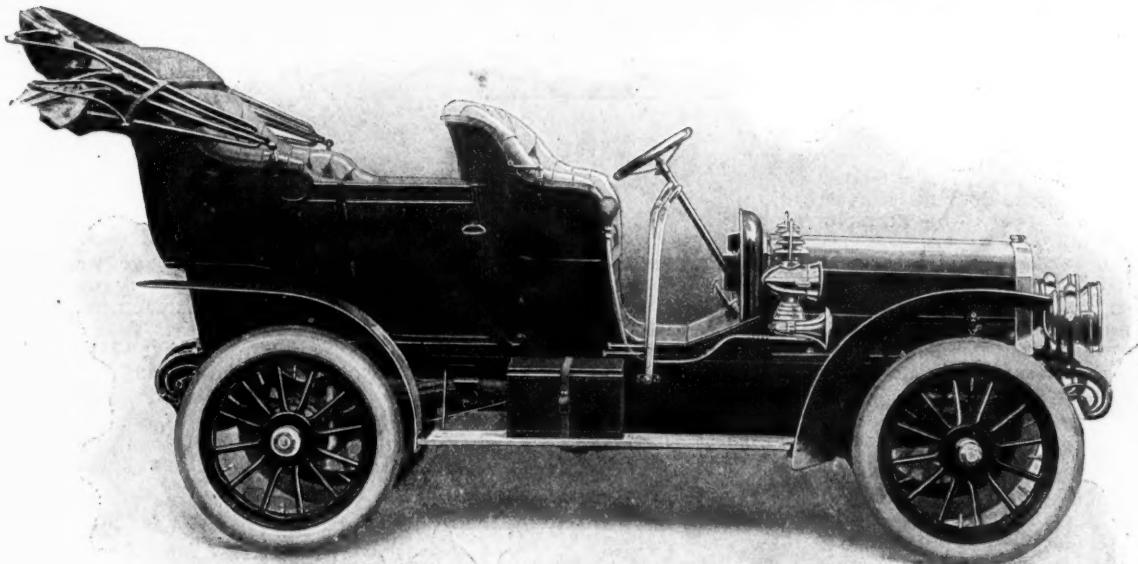
#### KENTUCKY DIVISION

District 1, counties of Fulton, Graves, Hickman, Carlisle, Ballard and McCracken; district 2, counties of Calloway, Marshall, Livingston, Trigg, Lyon, Caldwell and Crittenden; district 3, counties of Hopkins, Webster, McLean, Daviess, Henderson and Union; district 4, counties of Christian, Muhlenberg, Todd, Logan and Butler; district 5, counties of Ohio, Grayson, Hancock, Breckenridge, Mead and Hardin; district 6, counties of Simpson, Allen, Warren, Edmonson, Hart, Larue, Metcalfe, Barre and Monroe; district 7, counties of Bullitt, Jefferson, Nelson, Spencer, Shelby, Oldham, Henry and Trimble; district 8, counties of Casey, Marion, Washington, Mercer, Boyle, Lincoln and Garrard; district 9, counties of Taylor, Green, Adair, Cumberland, Russell, Clinton and Wayne; district 10, counties of Pulaski, Laurel, Whitley, Knox, Clay and Bell; district 11, counties of Rockcastle, Jackson, Owsley, Lee, Estill, Madison, Lark, Montgomery, Powell and Wolfe; district 12, counties of Jessamine, Fayette, Woodford, Anderson, Franklin, Scott, Harrison, Nicholas and Bourbon; district 13, counties of Owen, Carroll, Gallatin, Boone, Grant, Pendleton, Campbell and Bracken; district 14, counties of Robertson, Mason, Fleming, Bath, Morgan, Menifee, Elliott, Rowan, Lewis, Greenup, Carter, Boyd and Lawrence; district 15, counties of Harlan, Leslie, Perry, Letcher, Knott, Floyd, Pike, Breathitt, Magoffin, Johnson and Martin.

#### CALIFORNIA DIVISION

District 1, counties of San Francisco and San Mateo; district 2, counties of Alameda and Contra Costa; district 3, counties of San Joaquin and Calaveras; district 4, counties of Santa Clara, Stanislaus, Tuolumne, Mariposa, Mono, Fresno, Merced, San Benito, Inyo and Madera; district 5, counties of Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Kern, Kings and Tulare; district 6, counties of Ventura, Los Angeles, San Bernardino, Riverside, Orange and San Diego.

# WINTON



## Up-keep Reduced by Winton Model K Lubrication

Why lubricate the bearings of a motor car? Because two metal parts rubbing together would soon be ruined by friction and wear.

How does lubrication prevent friction and wear? Proper lubrication forces oil into the bearings so that a film of lubricant separates the moving parts. Hence these parts do not touch and cannot wear. But the oil does wear.

So you must choose whether you want a car that wears out its expensive steel and brass bearings, or one that wears out oil, which is much cheaper and which preserves the costly bearings.

If the oiling system is faulty, the damage is quite as much as if you had no lubrication at all. Because then both the bearings and the oil are worn by friction.

Economy of Up-Keep demands a perfect system of lubrication.

The Winton Model K has the best system of lubrication on earth.

Oil is fed in adjustable measured quantity to each bearing. Therefore there is no waste of oil. But instead, all the while each bearing gets all the oil it needs.

This oiler feeds only when the engine is in motion. That also prevents waste.

Oil is fed at regular intervals, so that the bearings are never flooded and never starved, but are always sufficiently fed.

But suppose all other oilers had these same points of merit—which they do not have. There are still other exclusive features that make Winton Model K lubrication infinitely the most positive, reliable and expense-saving.

First—There are no valves to clog and get out of order.

Second—Oil is not fed by gravity nor by air pressure, but by mechanical force. Clogged tubes can stop gravity-fed oil before it ever gets to the bearings. And air pressure can leak so that the oil stands idle in the tubes. But the Winton Model K lubricator exerts mechanical pressure so powerful that even in the most frigid weather lubricating oil cannot stop in the tubes or in the reservoir (on the dash), but must reach the bearings and there prevent friction and wear. This Winton Model K oiler positively shoots oil to the bearings with the force of a catapult and the accuracy of mathematics. That means money saved to you.

No excuse for buying a car that ruins its own bearings, when you can get the perfectly lubricated, expense-saving Winton Model K.

**WINTON MODEL K**—Four cylinder, vertical, water-cooled; 4½-in. bore; 5-in. stroke. Individual clutch transmission. Winton Air Governor. Winton Twin Springs. Lubrication, Ignition and Carburetion simple and positive. \$2500 f. o. b. Cleveland.  
“The typical American motor car.”—Americanized Encyclopaedia Britannica.

### 750 MILES WITHOUT ADJUSTMENT.

Mr. A. L. Stark, Elyria, O., says:

“During the last three weeks I have run my Model K Winton 750 miles. The greater part of this distance was covered in a trip to Rochester, N. Y., and return. The entire 750 miles have been made without a single adjustment and entirely without tire trouble. I find the Model K has ample power to take all but the steepest hills on the high speed. It runs very quietly. I am more than pleased with the way the car handles, and it certainly is a beauty.”

## The Winton Motor Carriage Co.

CLEVELAND, O. Member A.L.A.M. U.S.A.

Winton Transcontinental Exposition now en route to the Pacific Coast

CATALOG NO. 2 IS READY

# The New Model 1906

# Rainier

30-35 H. P.

What is the automobile buyer going to do when he is strenuously told that each and every one of the 1906 cars is  
**THE BEST CAR IN THE WORLD.**

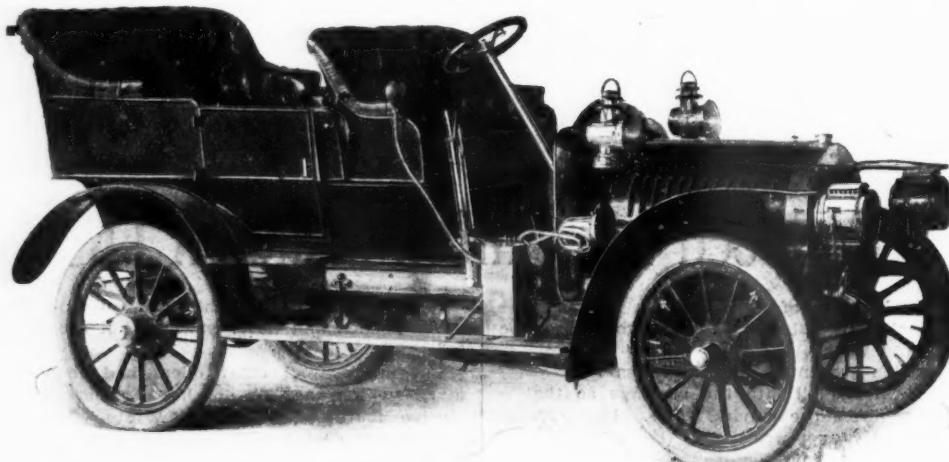
He is going to do a little investigating.

He is not going to be attracted nor distracted by the whirlwind of words with which one car after another comes before the public on paper.

When he gets down to business, he will find the RAINIER in the front rank of cars that have won renown and made fast friends by actual achievement. He will find that in every inch of metal and wood, in every working part, in every line, the Rainier as it will take the road in 1906 is the very embodiment of strength, compactness, lightness and beauty—now more than ever "The Pullman of Automobiles."

We want good Rainier agents in all unassigned territory. We can give them a car to sell that WILL sell, and that will make a new salesman of every purchaser. We stand back of the Rainier with the broadest and most liberal guarantee ever given.

Correspondence invited.



**ENGINE.** 30-35 H. P., 4 cylinders, water cooled.

**IGNITION.** Sims-Bosch Magneto—make and break spark

**TRANSMISSION.** Sliding train. 3 speeds forward and one reverse.

**REAR AXLE.** Bevel gear drive, clutch driven hub. Ball bearings.

**FRONT AXLE.** I Beam section. Ball bearings.

**FRAME.** Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.

**WHEEL BASE.** 104 inches.

**WHEELS.** Imperial whalebone, grade A 2d growth hickory.

**TIRES.** Continental 34x4.

**VALVES.** Mechanically operated, inlet and exhaust interchangeable.

**CARBURETER.** Float feed, requiring no adjustment.

**BRAKES.** Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.

**BODY.** Full aluminum, double side entrance.

**EQUIPMENT.** Two head lights, 2 side lights, 1 rear light, 1 horn.

## Price, \$4,000

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinders—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body.

## Price, \$3,500

### BOTH MODELS GUARANTEED FREE OF REPAIRS FOR ONE YEAR

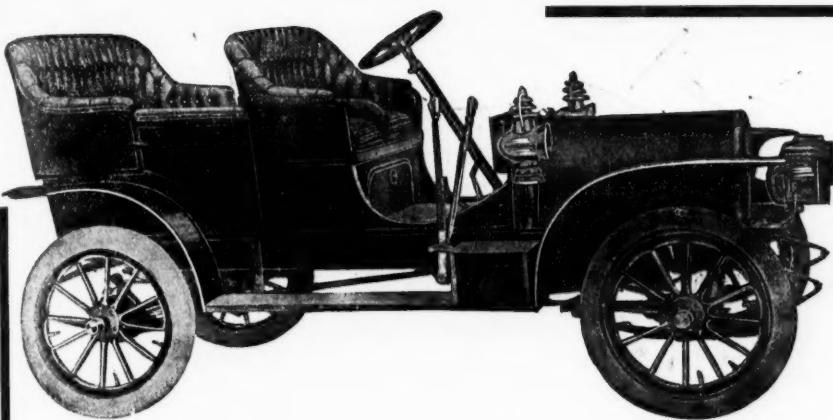
**The world's broadest and most liberal automobile guarantee.**

Landaulet bodies for immediate delivery. Limousines for November and December delivery.

## THE RAINIER COMPANY, Broadway, Cor. 50th St., New York

Boston Agents: MORRISON-TYLER MOTOR CO.

Good Agents wanted in unassigned territory.



**Type G Four-cylinder  
Light Touring Car**

Air-cooled shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Force-feed oiler on the dash. Four or five passengers. Side doors. 88-inch wheel base. 12 "Franklin horse-power." 1,300 pounds. 35 miles per hour. \$1800, f. o. b. Factory.

Full head and tail-light equipment.

## **Franklins are the most economical of all motor cars. Franklin air-cooling is one of the things that make them so.**

Franklins use less oil than many water-cooled cars; perhaps more than some; probably about the average. But if they used twice as much as the biggest they would still be the most economical of all motor cars.

They save on fuel and repairs. They save enormously on tires.

Any car uses from ten to twenty times more gasoline than oil; and the price of a good tire would supply oil for over ten thousand miles.

It isn't economy to save a nickel and waste a dollar. Economy is in saving the dollar; and still getting the results.

In the famous Long Island Economy Test an air-cooled Franklin won the trophy in competition with fifteen other cars—nearly all water-cooled.

The winning Franklin carried 4 people 190 miles on less than a gallon of oil, less than 10 gallons of fuel; and at a total expense of \$3.22.

The only car that came near this economy record was another air-cooled Franklin.

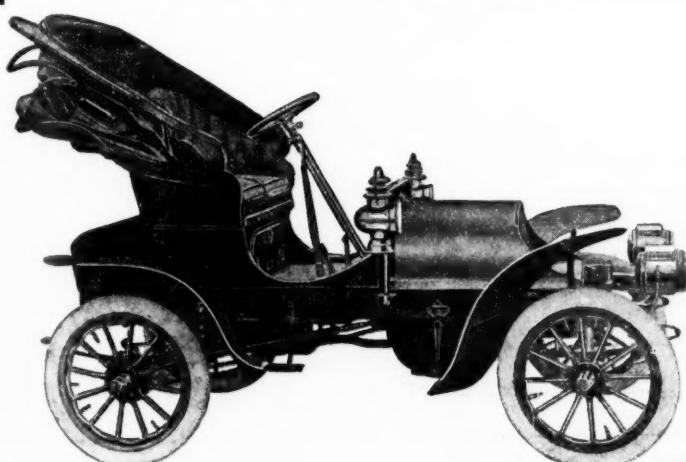
While, curious to tell, the one car which consumed precisely the same amount of oil and nearly twice as much fuel as the winner and required an expense of \$5.28 to carry the same people the same distance—was made by the very manufacturers who are just now howling loudest against air-cooling economy.

## **People who live in glass houses should dress in the dark**

**4 Models for 1906**

Send for the book

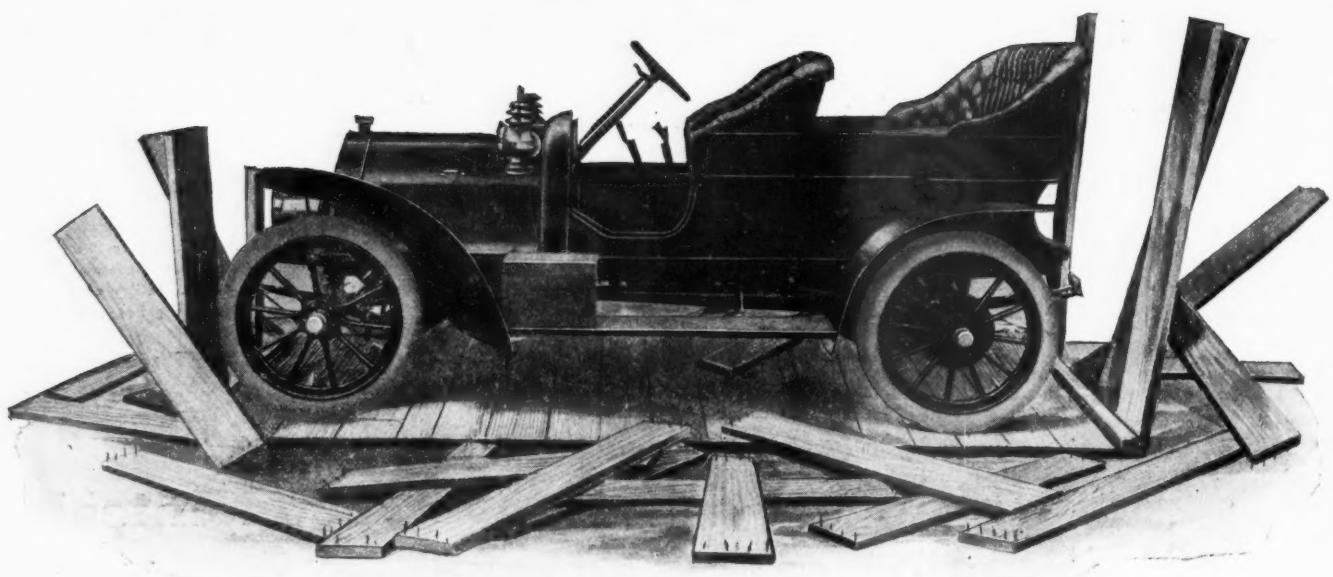
**H. H. FRANKLIN MFG. CO., SYRACUSE, N. Y., M. A. L. A. M.**



**Type E. 4-Cylinder Runabout or  
Gentlemen's Roadster**

Two passengers only. No tonneau can be attached. 12 "Franklin horse-power." Air-cooled engine. Wheel base 81½ inches—7½ more than last year. Roomier; more graceful; easier riding. Force-feed oiler on the dash. Change-lever inside the car and forward. Specially convenient when top is on. 1,100 pounds. One combination ironing which will accommodate canopy, cape or victoria top and glass front. 40 miles an hour. \$1400, f. o. b. Factory.

Full head and tail-light equipment.



## IT'S OUT

### The OLDSMOBILE MODEL "S"

A four-cylinder Touring Car of high power, great comfort and most distinctive design, selling at a reasonable price. A careful study in detail of its features will convince you it is the superior of any car in this country for equal money. Examine its lines and then its specifications.

If you are skeptical about the sensation in our announcement, our two-cylinder two-cycle car will convert you—it's up and coming—it has the style, the power and the "ginger" that wins the man who knows, and its extreme simplicity and marked freedom from disorders wins the experienced and inexperienced alike.

#### OUR PRICES :

Oldsmobile Model S, four cylinder, four-cycle . . . . .	\$2250
Oldsmobile " L, two-cylinder, two cycle . . . . .	1200
Oldsmobile " B, Standard Runabout . . . . .	650

PRICES INCLUDE OIL LAMPS, TUBULAR HORN AND COMPLETE TOOL EQUIPMENT. TWO ACETYLENE LAMPS AND GENERATOR WITH FOUR-CYLINDER CAR.

### THE LINE TO TIE TO FOR 1906

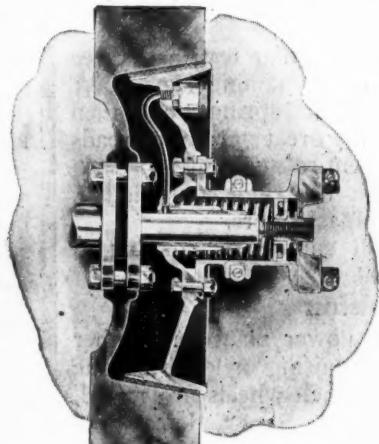
<p>CUT COUPON HERE</p> <p>CATALOGUE COUPON</p> <p><b>OLDS MOTOR WORKS</b> LANSING, MICH.</p> <p>Kindly send me information regarding cars checked. I am interested.</p> <p>Model B...      Delivery Cars... Model S....      Passenger Model L....      Traffic Cars...</p> <p>Name _____ Address _____</p>	<p>CUT COUPON HERE</p> <p>CALENDAR COUPON</p> <p><b>OLDS MOTOR WORKS</b> LANSING, MICH.</p> <p>Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs</p> <p>Name _____ Address _____</p>	<p>CUT COUPON HERE</p> <p>MOTOR TALK COUPON</p> <p><b>OLDS MOTOR WORKS</b> LANSING, MICH.</p> <p>Enclosed find 25 cents, for which have MOTOR TALK, a magazine devoted to automobiling, sent to me for 1 year.</p> <p>Name _____ Address _____</p>
---	---	--

# OLDSMOBILE

Without going into minute details of construction of Model S (which we will gladly send you upon application), we will mention some of its features which stand out prominently, giving this machine its **marked individuality**

The Motor is of the four-cylinder, vertical, water-cooled type, developing 24 to 26 H. P. The cylinders are cast in pairs and are water-jacketed in such a manner that only the cylinders themselves are cooled, but the valves as well. All material used in the construction of the motor, as well as in every part of the machine, is carefully analyzed and tested, and each cylinder is thoroughly inspected. In common with the most up-to-date cars the motor may nearly always be started from the seat, thus doing away with the necessity of cranking. This is a very attractive feature.

The Crank Shaft is of special carbon steel and runs in long bearings. An oil pump in constant operation forces oil to all main bearings.

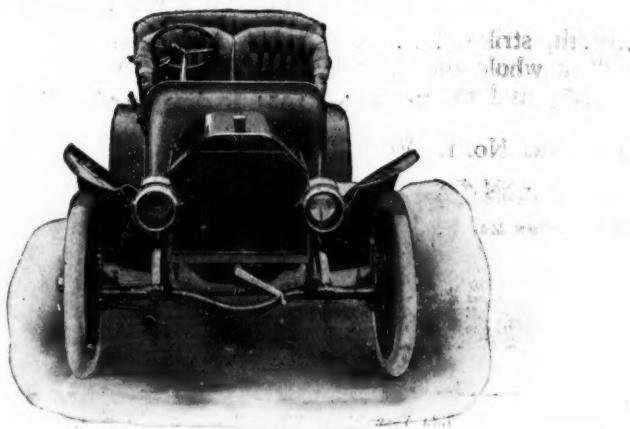


Cross Section of Clutch

The Springs are of flexible, half elliptic type, giving exceedingly easy riding qualities. Length, 36 inches front, 48 inches rear.

The Ignition consists of four unit coils operated by dry cells, storage battery or magneto. The commutator is very accurate in its action and is instantly accessible—**accessibility of parts being a feature of this car**. The spark plugs are easily examined and connections quickly and positively made.

The Axles are fitted with Timken Roller Bearings throughout, and are made sufficiently heavy to withstand hard usage. The rear axle is fitted with bevel gear drive, eliminating chain trouble.

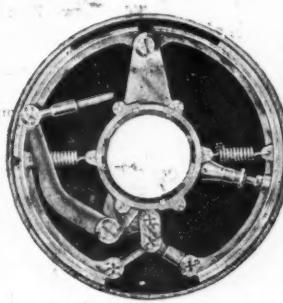


Oldsmobile Model S

The Wheels are 32-inch, equipped with 3½-inch pneumatic tires. Four-inch tires for unusual or extraordinary service can be had on special order.

The Brakes. Each rear wheel is fitted with an effective toggle joint brake, which is absolutely positive in action, the large friction surface insuring a brake that brakes. Transmission brake is operated by foot lever.

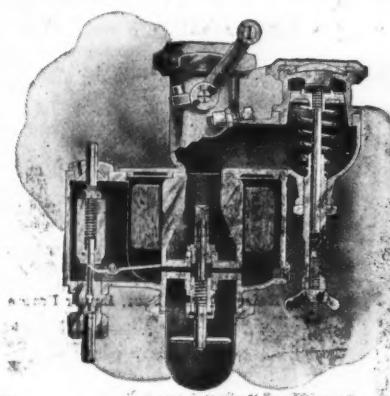
The Steering Gear is of the "worm and nut" type, controlled by 16-inch wheel placed in very comfortable position. Spark and throttle control levers are located just below the wheel on right-hand side of the post. In addition to the regular throttle an accelerator pedal is provided, whereby speed may be momentarily increased.



Cross Section of Rear Hub Brake

The Carburetor is of the most efficient and best type. Particular attention has been given to this most important part of an automobile power equipment. Our new and improved carburetor, has several distinctive features; for instance, the gasoline nozzle instead of being placed in a mixing chamber by itself, runs up through the center of the float chamber. An auxiliary air inlet is also provided, which insures the maintenance of a perfect mixture. The result is a large decrease in fuel consumption and increased power.

The Water Circulation is by gear pump driven from crank shaft. Water is forced around water-jacket and out into the radiator mounted in front of car. Sufficient cooling surface has been provided, so that the temperature of the water is always kept well below the boiling point.



Cross Section of Carburetor

Next week we will take up these and other distinguishing features of the Oldsmobile more in detail and show what they mean to you as a dealer or a buyer. Model "S" has a well-balanced, rangy exterior, distinctive and irresistably attractive. It has the equally well-balanced internal construction. It's the car that commands your attention on sight and holds your interest on demonstration. Orders are now being entered for these cars.

**OLDS MOTOR WORKS**  
LANSING, MICH., U. S. A.

# THE MARMON

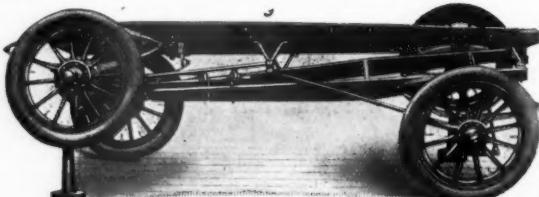
**"A Mechanical Masterpiece"**



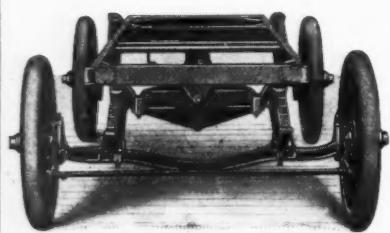
Side View—Normal Position.

**No Jolts  
for Passengers**

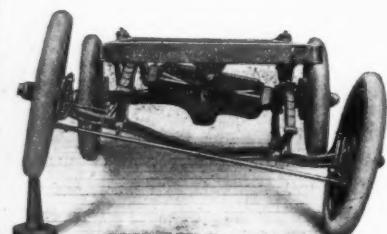
**No Strains  
for Mechanism**



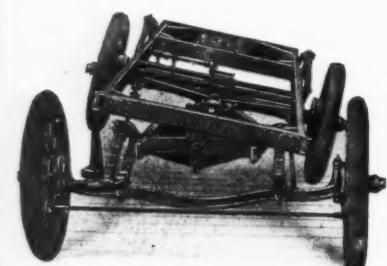
One Front Wheel and Opposite Rear Wheel Each Raised Over a Foot. Not a Strain Anywhere.



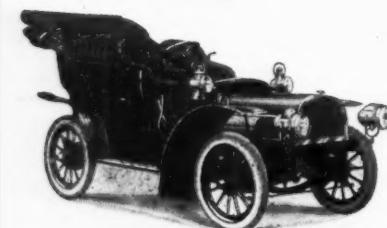
Front View—Normal Position.



Front Wheel Raised Over a Foot, Body Level.

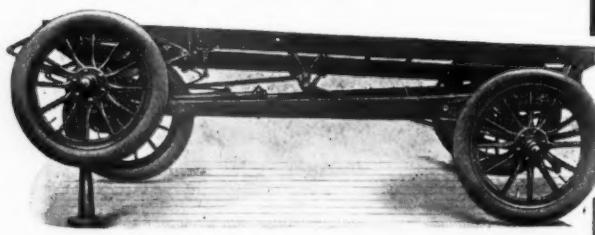


Rear Wheel Raised Over a Foot, Lower Frame Level.



Side View—Front Wheel Raised Over a Foot.

**Rides  
Like  
a  
Sail  
Boat**



Side View—Rear Wheel Raised Over a Foot.

THESE pictures afford a clear view of the mechanical beauty of a car that is in all ways superb.

They show how easily the Marmon meets and overcomes the roughest road conditions, through its remarkable flexibility.

The first effect realized is the freedom from jolts and vibrations—a very luxury of motion over any and all roads, unknown in *any other car*.

More important still, no matter how rough the road, the running gear adjusts itself naturally to the ruts and bumps without subjecting the mechanism to binding or twisting strains. This is true of *no other car* regardless of price or prestige.

To determine how any other car would act under similar test, nail three legs of a chair securely to the floor and try to lift the remaining leg. Make some slight allowance in favor of the car because of its springs, and then charge against it the costly mechanism it carries and the great variety of roads over which it must travel, often at high speed. The entire mechanism is thus racked by twisting strains and ruinous friction in any such rigid construction, and not the least of the sufferers are the tires and the passengers.

The Marmon elasticity is supplemented by full elliptic springs but is primarily due to a patented exclusive feature.

#### Double Three-Point Suspension

Luxurious solid cast aluminum body on one frame, power plant on another frame, *each frame suspended on three pivotal points*. Raising or lowering one wheel does not affect the other wheels. No matter which wheels are raised, no matter how the two frames are tilted, the entire power plant and rear axle are *always in perfect alignment*. Straight and rigid shaft drive (without any sort of flexible couplings) delivers a greater percentage of power to the wheels than is possible in any other scheme of transmission.

The Marmon oiling system (fully patented) has no equal. Starting and stopping with the engine, a constant and uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and piston pin bearings. Simple, unfailing, very economical; has no adjustments. Spur planetary transmission (clutches included) running in oil.

Four cylinder motor; perfectly air-cooled. Spark and throttle control on steering wheel.

The Marmon is stylish, strikingly handsome and very quiet. It is "A Mechanical Masterpiece" in whole and in every part, replete with distinctive features that appeal instantly and forcefully to all who seek a really superior car.

Full description in Booklet No. 1. Write for it.

**NORDYKE & MARMON CO. Established 1851 Indianapolis, Ind.**

Members American Motor Car Manufacturers' Association

**SUPPOSE** you bought a car last winter at the Show, received it about a month later than it was promised—paid about \$2,000 for it; spent \$500 more or less on tires and repairs, and now find that the maker is going to stop making this car, or is going to cut the price \$500 for next year—your car is now worth about \$1,200, isn't it? and your summer's fun has cost you \$500 plus \$800 (depreciation), which is \$1,300—which for six months use is over \$200 a month—pretty steep, when you figure it up this way, isn't it?

Suppose you had bought a Stevens-Duryea at \$2,500, spent \$25 for tires and repairs (for that's all they have averaged)—It is not taken off the market at the end of the year, it is not cut in price for next year—you don't have to trade it in at a sacrifice of 40 per cent—(about a thousand dollars) in order to have an up-to-date car for next year.

Which car would you consider a better bargain?

## J. STEVENS ARMS & TOOL CO.

*Makers of the Twentieth Century Hustler*

705 MAIN STREET CHICOPEE FALLS, MASS.

*Member Association Licensed Automobile Manufacturers*

# PHARE-LITE



Parabolens Headlight, List Price \$15.00.

## The Phare-Lite is

The most durably constructed lamp ever made. Most simple of all lamps to operate. Throws most brilliant light and ejects its ray further than any lamp now on the market. Strikingly beautiful in appearance. *List Price about One Half the cost of Other Good Lamps.*

AND EACH CLAIM MADE  
**WE GUARANTEE**  
**DEALERS**

who have their weather eye always on the **MAIN CHANCE** will probably lose no time in writing for the entire story.

Without Frills  
or Fancy Words  
**THESE  
CLAIMS**  
We Make



Parabolens Bullet, List Price, \$18.00.

**EXCELSIOR SUPPLY CO.**  
233-235-237 RANDOLPH ST., CHICAGO, ILL.

WE HAVE COMMENCED DAILY DELIVERY OF  
**MITCHELL**  
**CARS**  
**FOR**  
**1906**

**Runabout**

Model 2B, 2-cylinder, 8 horse-power, vertical motor, \$750 mounted in front . . .

**Touring Car**

Model 4B, 4-cylinder 18-20 horse-power \$1500

OUR 1906 PRODUCT WILL ALSO INCLUDE A NEW LINE OF COMMERCIAL CARS AND TWO OTHER MODELS SOON TO BE ANNOUNCED

The racy lines and aristocratic appearance of the **Mitchell** has made it first among cars "Once seen, long remembered." Added to the value of favorable "first impressions," dealers will find this line replete with good, sound common sense "proving points," meaning "talking points" which can be "proved." All cars possess "talking points," but it takes "proving points" to satisfy a wise buyer.

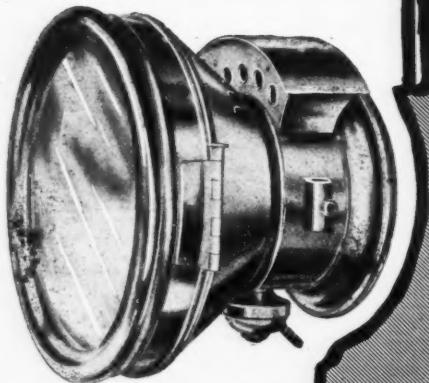
**DON'T DELAY. WRITE TO-DAY**

We cannot take care of a great many new dealers for 1906. But a few good ones—YES.



**MITCHELL MOTOR CAR COMPANY, Racine, Wis.**

Members American Motor Car Manufacturers' Association



NO. 77

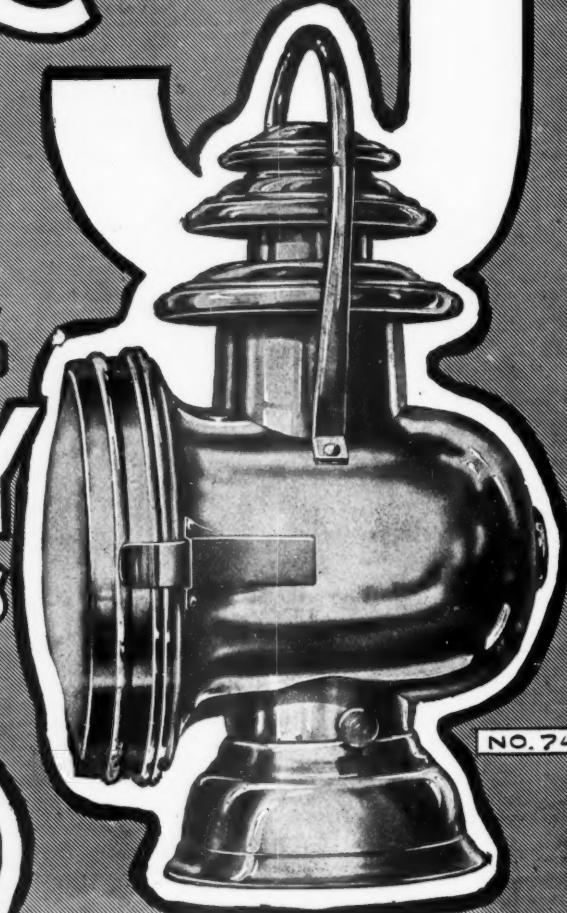


NO. 72

# MEANING QUALITY IN LAMPS



No. 30



NO. 74

We want every automobile manufacturer to get our proposition on

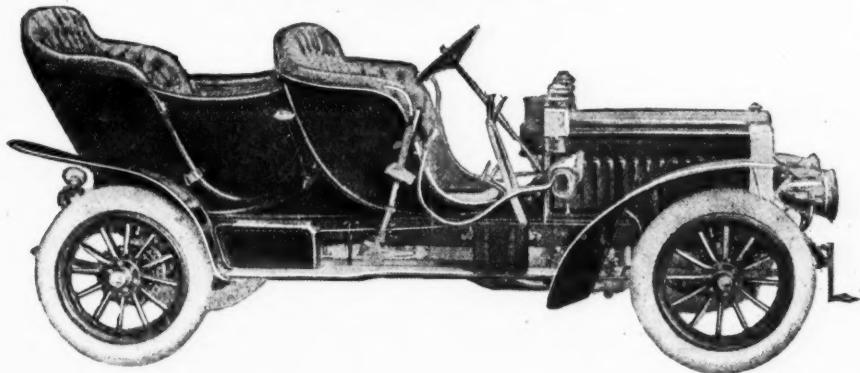
## **1906 LAMP EQUIPMENT**

We guarantee to please you in both quality and price.

Ask us to prove our business right to your order.  
One line of inquiry will start things moving.

**EDMONDS & JONES MFG. CO.**  
315 RIOPELLE STREET DETROIT, MICH.

# The Queen



## One of Our Three New Models

**MOTOR**—4-Cylinder—26-28-H.P. **FRONT AXLE**—Solid-forged.

**DRIVE**—Shaft Bevel Gear.

**FRAME**—Pressed Steel.

**WHEELS**—32 x 4.

**WHEEL BASE**—101 inches.

**TRANSMISSION**—Sliding Gear.

**GROUND PARTS**—All Cylinders,

Pistons, Piston Ring, Crank  
Shaft, Valves, Universal Coup-  
ling and Transmission Shafts.

**EQUIPMENT**—Five Lamps, Horn,  
Tools and Storage Battery.

We also have an 18-H.P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at \$1,100—and a Runabout 12-H.P. at \$800.

**Write us for complete details and agency proposition.**

**C. H. BLOMSTROM MOTOR CO., Detroit, Mich.**

# WAY'S MUFFLER

**A Sure Guarantee Against Colds**

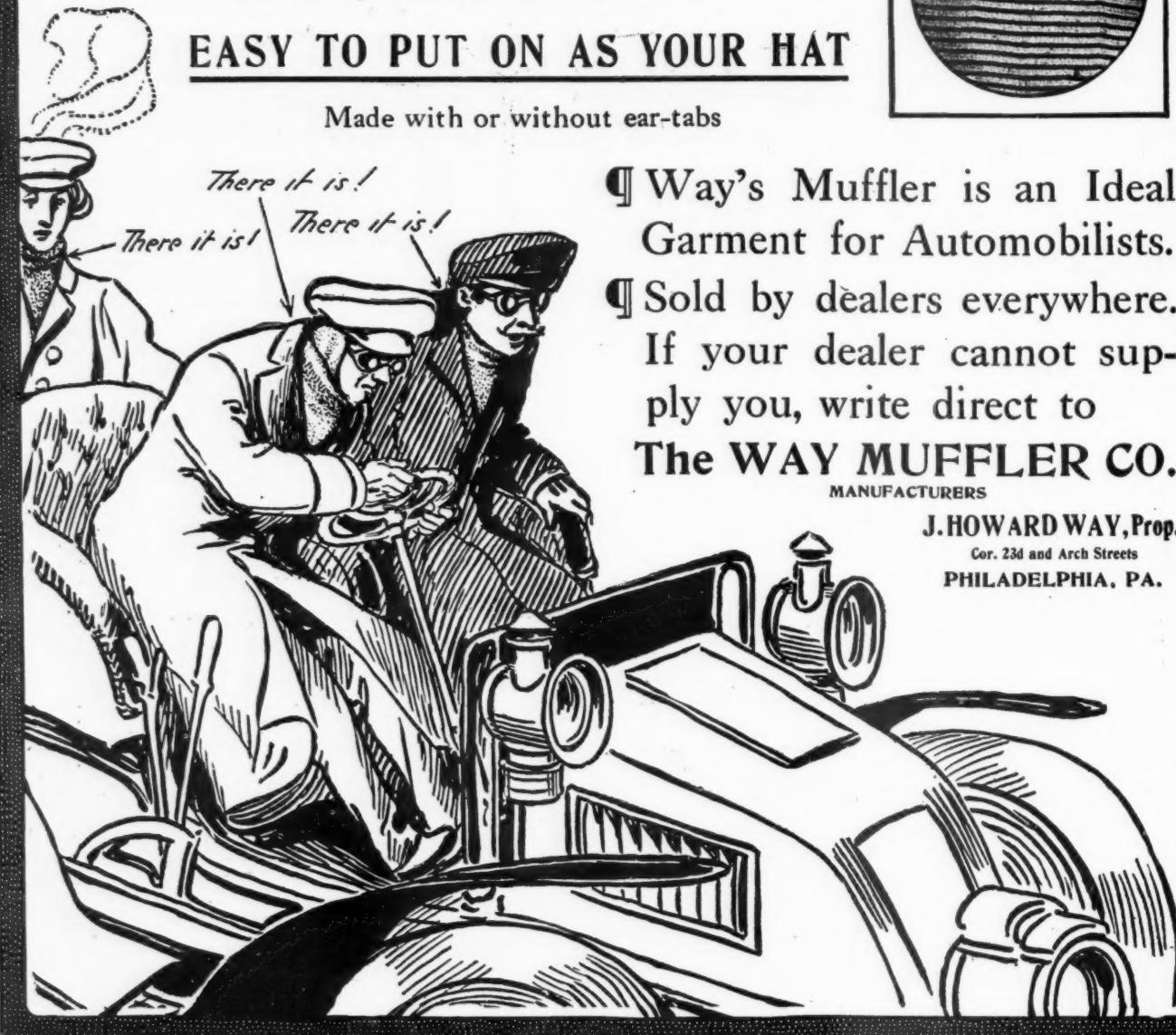
Especially adapted for Fall and Winter Automobiling

**A Perfect Throat and Chest Protector**

For Men, Women and Children

**EASY TO PUT ON AS YOUR HAT**

Made with or without ear-tabs

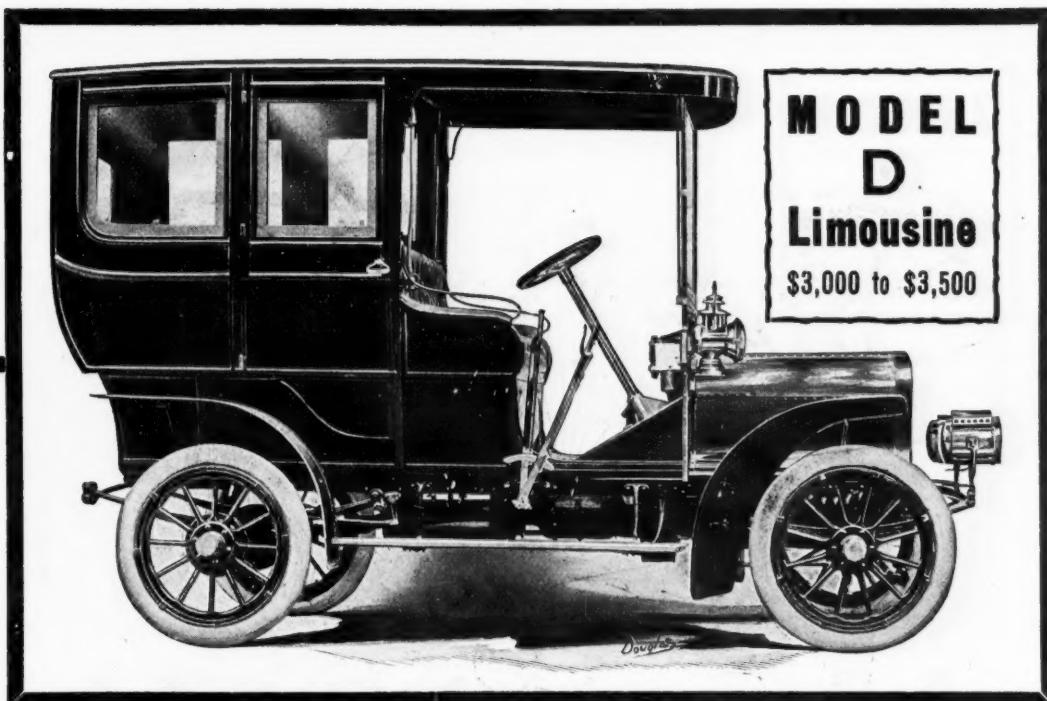


¶ Way's Muffler is an Ideal Garment for Automobilists.

¶ Sold by dealers everywhere. If your dealer cannot supply you, write direct to  
**The WAY MUFFLER CO.**

MANUFACTURERS

**J. HOWARD WAY, Prop.**  
 Cor. 23d and Arch Streets  
**PHILADELPHIA, PA.**



# CORBIN

## AIR-COOLED CARS

AIR-COOLING, highly desirable at all seasons, is especially advantageous when applied to cars for winter driving

**SILENT AS  
THE PURRING OF A  
KITTY**

Our Catalogue tells the story of Air Cooling in particular and of Corbin Cars in general. Sent on request.

**Corbin Motor Vehicle Corporation**  
NEW BRITAIN, CONN.

NEW YORK, 4 West Thirty-Eighth St.  
BOSTON, 43 Columbus Avenue

PHILADELPHIA, 629 North Broad St.  
CHICAGO, 1404-6 Michigan Avenue

**CHRISTMAS  
DIAMONDS  
ON CREDIT**

Santa Claus  
Up to Date

**Love Is the Real Santa Claus**

It is our love for our dear ones that makes Christmas a truly Happy Season, and that brings to one and all the joys of a Christmas remembrance.

**The Loftis System at Christmas Time**

Is a great and Timely Convenience to thousands, as it enables persons in all circumstances to make beautiful and appropriate Christmas Gifts. Everyone at Christmas Time is anxious to give their loved ones handsome Christmas Presents, but it is not always convenient. THE LOFTIS SYSTEM of Credit MEANS CONVENIENCE. That is the only way in which it differs from a cash transaction. There is no delay, no security, no publicity. It simply means a matter of convenience and convenience to honorable people. Write Today for Our Handsome Christmas Catalogue.

**You Are Welcome to Credit** whether you are a moderate salaried employee or a wealthy employer. The Loftis System makes any honest person's credit good by adjusting terms to meet their earnings or income. Do not think that you must give a cheap, ordinary present because you can only spare a few Dollars just now. With five or ten Dollars for first payment you can give a beautiful Diamond which will last forever, enhance in value and continually bring pleasant thoughts of the giver's generosity.

**Our Handsome Christmas Catalogue** is responsive with thousands of beautiful Jewelry suggestions for Xmas Gifts. Diamond Rings, Pins, Brooches and Earrings, Chatelaine Watches, Silverware, etc., for Wife, Sweetheart, Sister or Mother. Sparkling Diamond Studs, Scarf Pins and Cuff Buttons, Watches, Match Safes, Fobs, etc., for Husband, Father or Brother. With its aid you can select, in the privacy of your own home, suitable Gifts for all, both old and young. May we not have the pleasure of sending you a copy!

**True Merit Wins!** In competition with the entire world (both the United States and foreign countries) at the St. Louis World's Fair, our **Goods, Prices, Methods and Terms** won the Gold Medal, the highest award. No stronger endorsement of THE LOFTIS SYSTEM could be given.

This, together with the fact that we are the largest and oldest established Jewelry House in the United States, and that we refer you to any bank anywhere or any commercial agency as to our reliability and standing should interest you in our liberal offer to send you our Handsome Christmas Catalogue and to extend to you our most liberal terms as an aid to you in making Christmas a truly Happy season. Write today for Catalogue.

**Do Your Christmas Shopping Now.** Let us suggest that you do your Christmas Shopping now, conveniently and leisurely in the privacy of your own home. Select from our Handsome Catalogue the articles you desire and we will send them to you for examination and approval. If satisfactory retain them, paying one-fifth the cost and the balance in eight equal monthly payments; if not, return to us. We take all risks and pay all express charges. Now is the time to secure the choice selections and have ample time to inspect the goods. All orders filled promptly. Write Today for Our Christmas Catalogue.

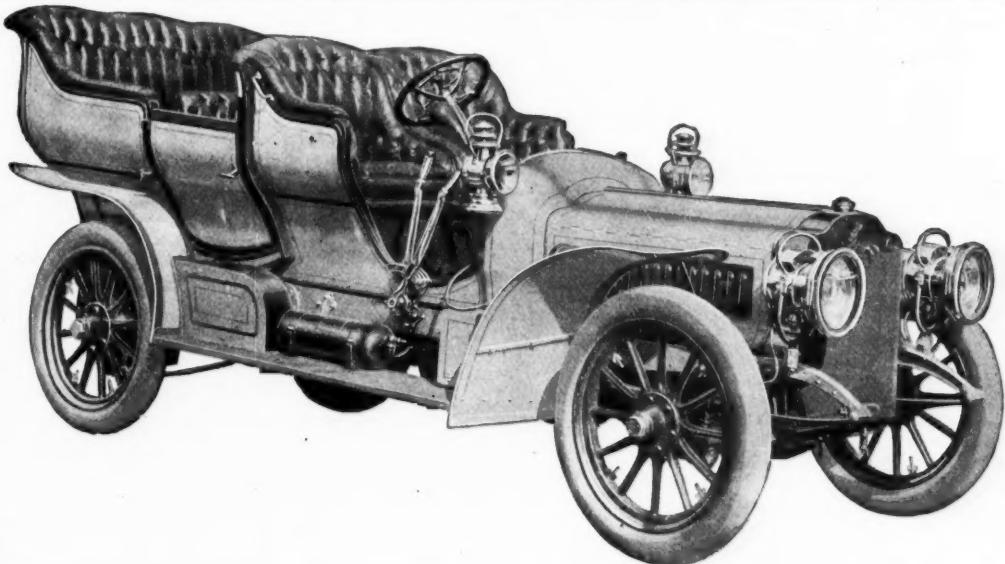
There is no better investment than a Diamond. They have increased in value more than twenty per cent during the past twelve months and Diamond experts predict an even greater increase during the coming year. Write today for Our Christmas Catalogue.

**LOFTIS**  
BROS & CO. LTD.

**DIAMOND CUTTERS**  
Watchmakers, Jewelers  
Dept. M560 92 State Street  
CHICAGO, ILLINOIS, U.S.A.

# The New Thomas

**Greatly Exceeds My Most Sanguine Expectations  
Experts Say It Is a Wonder**



**N**O customer is so critical or hard to please as the manufacturer, who, regardless of cost, absolutely determines to do his utmost to build the best car in the world.

But, when an ordinary Stock Touring Car, without special preparation or intention, runs sixty miles an hour on the level, and climbs a 10 per cent grade on the high speed at forty miles per hour, within an hour after it first leaves the shops, it is something that not one car in a thousand will do.

Under favorable conditions we should do sixty-five miles an hour.

I am more pleased than ever with its speed, hill-climbing, quiet operations and mechanical superiority, and cordially urge disinterested automobile experts everywhere to rigidly investigate our claims, and compare our material, workmanship and design with the highest-priced cars in the world—we will win the verdict.

E. R. THOMAS.

For the E. R. THOMAS MOTOR CO., Buffalo, N. Y.

**E. R. THOMAS MOTOR COMPANY**  
1417 Niagara Street      Members A. L. A. M.      BUFFALO, N. Y.

*National*



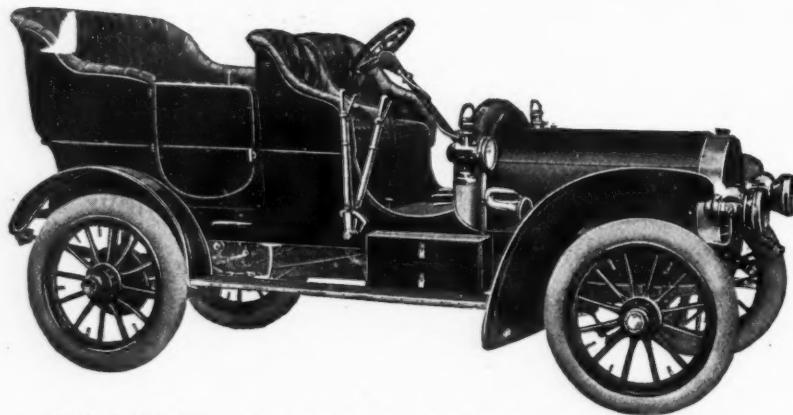
Jap Clemens in 1906 NATIONAL--stripped stock car which broke world's record.

# MAKES WORLD'S RECORD

at Indianapolis, Nov. 4, 1905

The National '06 Model won the 100-mile track race.

**100 MILES IN THE WORLD'S RECORD TIME OF  
1 HOUR; 53 MIN; 21 $\frac{4}{5}$  SEC.  
EVERY MILE AT AN AVERAGE OF 1 MIN; 08 SEC.**



National Model D--One of the same kind with roomy, luxurious body.

thus establishing a new world's record for stripped

## STOCK CARS

Two Nationals started in this race and for 83 miles made a wonderful demonstration of the UNIFORM RELIABILITY of National Cars, both cars running a nip and tuck race, at all times within 50 feet of each other, until one car was called off by the referee because of an unsafe tire.

Write for details.

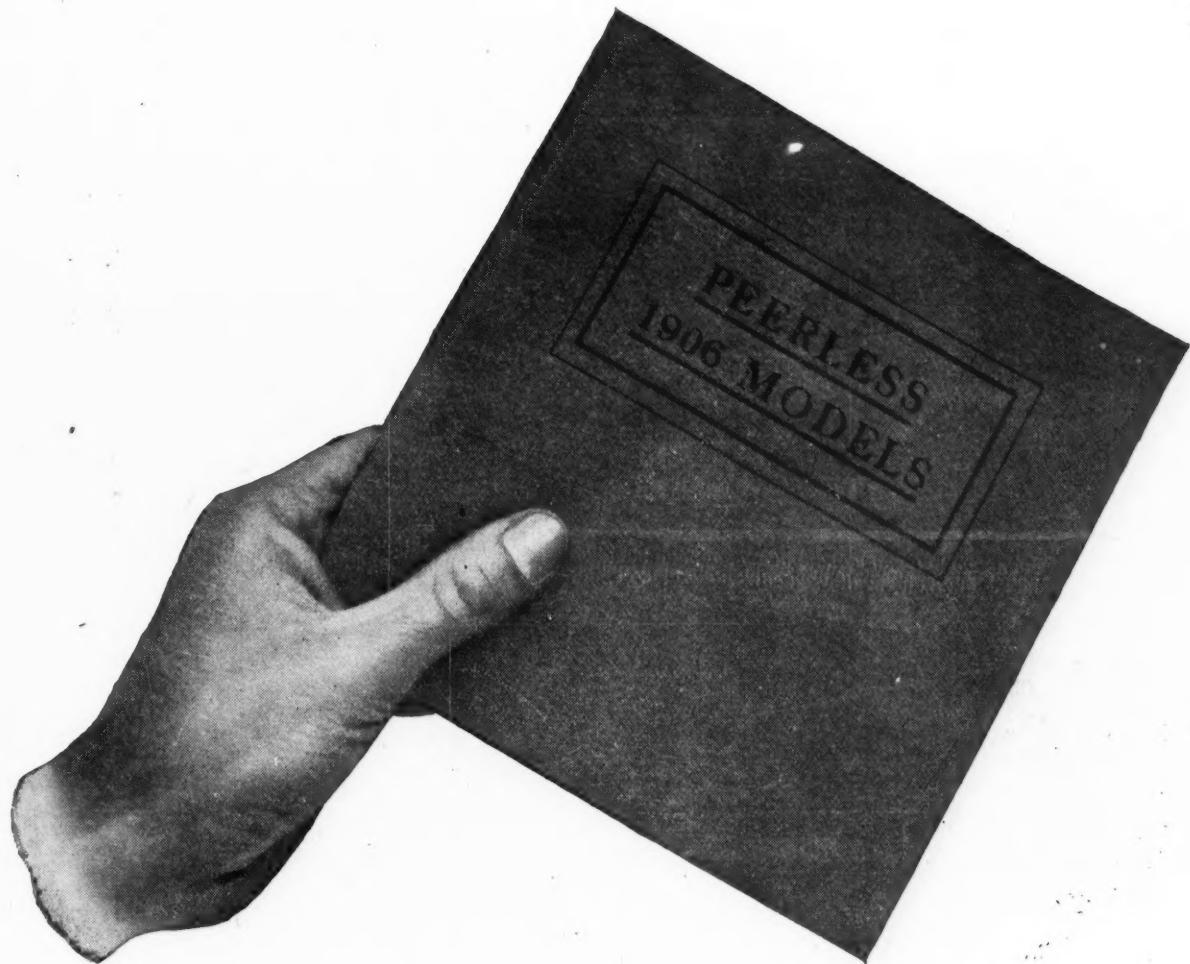
"Watch for the Round Radiator"

**National Motor Vehicle Co.**

1006 E. 22d St.,

Indianapolis, Ind.

MEMBER AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO



## SEND FOR THIS BOOKLET

of Peerless 1906 Information, if you intend to buy a 1906 car—or if you are interested in automobiles—for it contains one of the most complete mechanical descriptions of an automobile ever printed. It not only tells just what are the famous Peerless mechanical principles, but it also explains why we have found them best.

*A postal will bring it—Send today*

**THE PEERLESS MOTOR CAR CO.**

802 Quincy Street, Cleveland, Ohio

Member A. L. A. M.

# Motor Age Circulation

Here is a testimonial from a firm which systematically checks all returns from advertising—one of the most convincing and valuable testimonials a publication ever received—read it

ROBERT INSTRUMENT CO., 56 Shelby Street.

MOTOR AGE, Chicago, Ill. Detroit, Mich., Nov. 2, 1905.  
Gentlemen: Of all the publications relating to automobiling (and you will agree with us there are a few), we have shifted them thoroughly and from the entire "bunch" but four remain.

Of these four we have divided into two parts, "east" and "west." MOTOR AGE is west and the other three east.

The writer has practically "traced" every inquiry and order. The following form is made out weekly, and more often MOTOR AGE is first in amount of inquiries, orders and quantity.

The following is a copy of the last week, in which MOTOR AGE is again first:

	Inquiries.	Orders.	Quantity.	Inquiries.	Orders.	Quantity.	
MOTOR AGE .....	24	13	32	HORSELESS AGE .....	12	9	14
CYCLE AND AUTO.....	16	11	21	AUTOMOBILE .....	9	6	19

Yours very truly, (Signed) ROBERT INSTRUMENT CO.  
H. A. Abrahamson.



The above cut represents Post Office Receipts for 6,399 pounds net, of issue of October 26, 1905. Each paper, including wrapper, weighed an average of 9½ ounces.

6,399 pounds divided by 9½ ounces equals.....	10,777	papers
We also sold, non-returnable, to Western News Co. and news stands direct.....	674	"
Mailed under stamps to foreign addresses.....	90	"
Retained for office sales and distribution.....	350	"
Sold to Knight & Kelbourne for private circulation.....	600	"

Total for week of October 26.....	12,491	"
October 19, page 50, statement for October 5.....	12,239	papers
October 26, page 44, statement for October 12.....	12,868	"
November 2, page 48, statement for October 19.....	12,522	"
Statement above, for October 26.....	12,491	"

Average weekly edition for October issues, 12,530.

50,120 "

## STATEMENTS PREVIOUSLY PUBLISHED

July—Average weekly circulation.....	11,755	Total	47,020
August—Average weekly circulation.....	12,468	"	62,393
September—Average weekly circulation.....	12,535	"	50,141
October—Average weekly circulation.....	12,530	"	50,120

Average for 4 months, 17 issues..... 12,334 " 209,674

We have in preparation a pamphlet containing proof of all statements previously published, with other information regarding circulation, together with copies of a few testimonials received by MOTOR AGE from advertisers and subscribers, which will be ready in the near future.

Having firmly established the fact that MOTOR AGE leads from the standpoint of circulation, we shall now cease the publication of these statements among our advertising pages, and render reports direct to interested parties each month.

HONU

[We guarantee a Circulation of 12,000 Weekly

MOTOR AGE,

N. H. Van Sickle

Manager

# CADILLAC SALABILITY

**Here's the 1905 Sales Record of one of the principal cities of the Central States**  
(POPULATION ABOUT 300,000)

No. Lines Handled	Total Cars Sold	No. Lines Handled	Total Cars Sold		
Dealer No. 1.....	Two .....	12	Dealer No. 8.....	One .....	4
Dealer No. 2.....	Two .....	11	Dealer No. 9.....	Two .....	0
Dealer No. 3.....	Four .....	4	Dealer No. 10.....	One .....	2
Dealer No. 4.....	Four .....	1	Dealer No. 11.....	Two .....	1
Dealer No. 5.....	Two .....	2			
Dealer No. 6.....	One .....	6			
Dealer No. 7.....	One .....	0			

Total sales by above dealers 43 cars

**THE CADILLAC DEALER SOLD 51 CADILLACS**

Or about 15 per cent more Cadillacs than the sales of all the other dealers combined

**There's a Reason For This and It's Not Hard to Guess It**

*We're Talking 1906 Business*

**CADILLAC MOTOR CAR CO.,**

*Member Association Licensed  
Automobile Manufacturers.*  
**DETROIT, MICH.**

Will you write us about the  
**1906 Agency for the Wayne?**

The Wayne Agency for 1906 is a good thing. The Wayne Cars were extensively advertised last year in all the leading magazines and trade papers. For 1906 we have made arrangements for a campaign of cooperation with our local agents which will mean practical assistance in selling Wayne Cars. We realize that to get good agents it is necessary for the agent to have a proposition on which he can make money, and the Wayne agency proposition is one which it will pay you to investigate.

The Wayne line for 1906 is comprised of cars that have proved their ability to stand hard usage by three years' road service.

We have not changed the Wayne principle of construction because nobody has yet been able to show us anything better tho' our cars contain all new improvements and are strictly up-to-date (no old models built over).

*WRITE US AND FIND OUT WHAT WE HAVE TO OFFER, BEFORE YOU FORGET*

**WAYNE AUTOMOBILE CO. - Detroit, Mich.**

# THE HARTFORD DUNLOP TIRE

OFFICE OF  
DR. J. B. BOUCHER,  
20 CHARTER OAK AVE.,  
TELEPHONE CALL 1900.

Hartford, Conn., Oct. 33, 1905.

The Hartford Rubber Works Company,

Hartford, Conn.

Gentlemen:-

You may be interested to learn that the Hartford Dunlop tires fitted to my two cylinder Knox which I have driven all season, have thus far covered a little over 3500 miles. I have had no trouble with the exception of four punctures. I am much pleased with the tires both as to their wearing qualities and the ease with which they can be removed and replaced.

I do not enjoy punctures but must admit that they are robbed of half their horror since using the Dunlop.

Very respectfully yours,

*J. B. Boucher M.D.*



## THE Hartford Rubber Works Company

Home Office and Factories Nos. 1 and 2,  
HARTFORD, CONN.  
Factory No. 3, New Brunswick, N. J.

### BRANCHES:

BOSTON, 492 Atlantic Ave.  
NEW YORK, 88 Chambers St.  
NEW YORK, 1769 Broadway.  
NEW YORK, 2355 Jerome Ave.  
PHILADELPHIA, 138 N. Tenth St.  
BUFFALO, 68 Main St.  
SAN FRANCISCO, 41 Mission St.  
CLEVELAND, 77 Bank St.  
DETROIT, 256 Jefferson Ave.  
CHICAGO, 83 Michigan Ave.  
DENVER, 1564 Broadway.  
LOS ANGELES, 116 East Ninth St.

## Just a Few Details

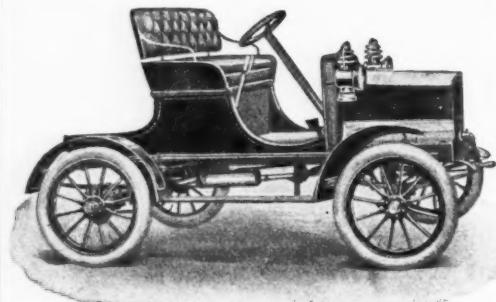
of our Models G and H which we could not mention in our announcement in Motor Age October 19 and 26: First a word about 2 cycle motors. In this construction all valves, cams, cam shafts and all gearings are entirely omitted as compared with 4 cycle motors. 75 per cent less working parts, 75 per cent less trouble. Our motor is as quiet as is possible to make a gasoline car. Both models, G and H, have 2 cycle, 2 cylinder vertical motors under hood in front. Beautiful body design, materials all of the very best, planetary transmission. **One lever controls all speeds and brake.** Model G lists at \$650, Model H lists at \$750.

### NOTICE

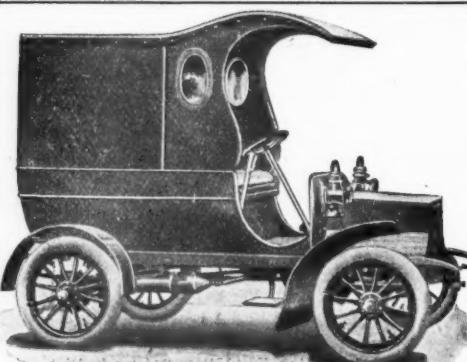
#### We Want Agents in Every Locality

Agents who will hustle. Our line a quick seller and will remain sold. Fewer parts, fewer repairs, fully equipped.

ADDRESS  
DEPT. "C"



Model "G" 10 h.p. Runabout



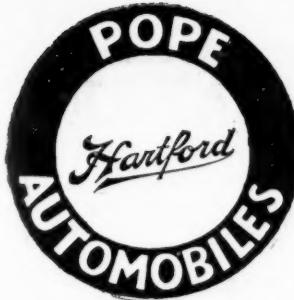
Model "H" 10 h.p. Delivery.

## Wolverine Automobile & Commercial Vehicle Co.

DUNDEE

...   ...

MICHIGAN



# Nothing Approaching it in Quality for the Price

## Our 1906 New Pope-Hartford Model F

Will give you style, elegance and comfort, and it cannot be excelled at anywhere near the price for quietness, speed and hill-climbing qualities.

**MOTOR:** A four-cylinder, vertical, water-cooled engine with cylinders cast in pairs, all gears encased, developing under break test 28-30 H. P.

**TRANSMISSION:** Of the sliding gear type, three speeds forward and reverse.

**BEVEL GEAR DRIVE:** Through a propeller shaft to the rear axle.

**THE BODY:** Is of new and graceful design, comfortably seats five people, non-removable dust-proof tonneau.

### Pope-Hartford Model D

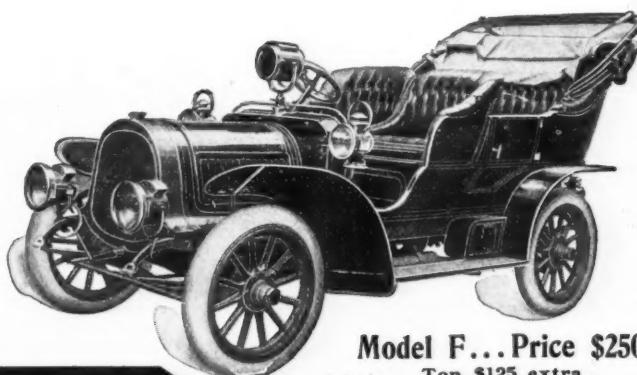
A two-cylinder opposed, 18 H. P. touring car, wieldy and reliable. The machine that did the 1300 miles of the Glidden Tour with only a ten cent repair. **Price, \$1,600.**

Catalogue will be mailed on request.

### Pope Manufacturing Company HARTFORD, CONN.

New York City: 1733 Broadway  
Boston, Mass.: 223 Columbus Ave.  
Washington, D. C.: 819 14th St.  
San Francisco, Cal.: 451 Mission St.

A. L. A. M.



Model F... Price \$2500  
Top, \$125 extra

# Change Tires—Thirty Seconds Goodyear Universal Rim

SUPPOSING you were 25 miles from home, and your tire exploded. And you hadn't another with you. And when you stopped at the garage, the man said: "I'm sorry, but I haven't a single tire of that make."

Wouldn't it make you mad?

Of course it would, if you had an ordinary rim.

But if you had a Goodyear Universal Rim, you would smile and say: "Bring on any old tire, as long as it's a clincher, my rim will take it." And in less than three minutes you would be enjoying the scenery once more.

Because it isn't an all day job to take off and put on a tire when your car has Goodyear Universal Rims. Just jack up the wheel and in 30 seconds the old tire is off, and in another 30 seconds the new tire. ANY kind, is on. You need no tools but the hands. And are "fixed up" and on the road while the man with ordinary rims is hunting for his crowbars and levers.

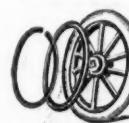


Figure 1

You see the flange comes right off on Goodyear Universal Rims like Fig. 1.



Figure 2.

And then a 26-inch tire (for example) slides right on to the 26-inch rim like Fig. 2, as easy as you would put on your hat. On an ordinary rim, you would have to pry that 26-inch tire over a 27-inch flange. You know what a profanity inspiring job that is, and it doesn't do the tire any good either.

Now this is all there is to

taking off and putting on a tire when you have Goodyear Universal Rims. See how simple and easy it is.

The rim is made up of four parts, like Fig. 3.



Figure 3.

Nos. 1 and 3 are the removable flanges (rings) which can be adjusted to any clincher tire.

No. 2 is the base of the rim attached to the felloe of the wheel. It can be used without fitting on any standard wheel built for standard clincher rims.

No. 4 is the binding ring which holds the flanges in place.

If you have decided to relieve yourself of all tire troubles and in consequence ride Goodyear Detachable Auto Tires, a section of the rim when put together would be like Fig. 4.

Or, if you ride an ordinary clincher tire, the rim section would look like Fig. 5.

The ring which holds the flanges in place is split at a point alongside the valve stem, like Fig. 6.

It can't be removed (and, of course, the tire can't come off) while the flange



Figure 4.



Figure 5.



Figure 6.



Figure 7.



Figure 8.

presses against it. This flange is kept tight against the ring by a plate which slips over the valve stem like Fig. 7.

When you wish to remove the tire, loosen the nut which holds the valve stem down, and push the stem up through the rim. This pushes up the plate and lets the flange ring slide inward like Fig. 8.

Then lift out the binding-ring, slip off the flange, and pull off the tire.

Time, 15 seconds. No tools but the hands.

Those who are weary of tire troubles are specifying Goodyear Year Auto Tires on Universal Rims. This equipment costs no more than the ordinary kind, and multiplies the pleasures of motoring many times.

Ask for our "Good News Book" and find out all the good points of the Goodyear Auto Tire and Universal Rim. It's of vital interest to the Manufacturer, Dealer or User who is satisfied with nothing but the best.

## THE GOODYEAR TIRE & RUBBER COMPANY,

Branches in following cities: Boston, 6 Merrimac St.; New York, 233 West 4th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 60 Frankfort St.; Philadelphia, 1521 Spring St.; Denver, 220 Sixteenth St., and Detroit, 242 Jefferson Ave.

Wallace St., Akron, Ohio

## The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

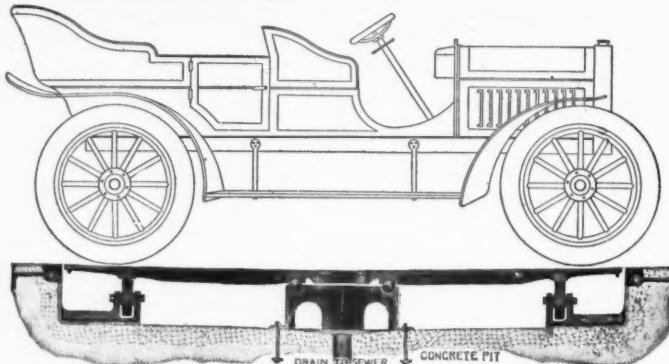
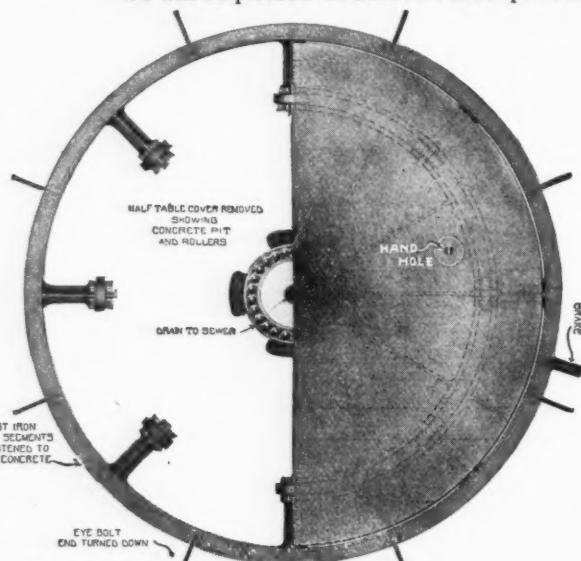
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

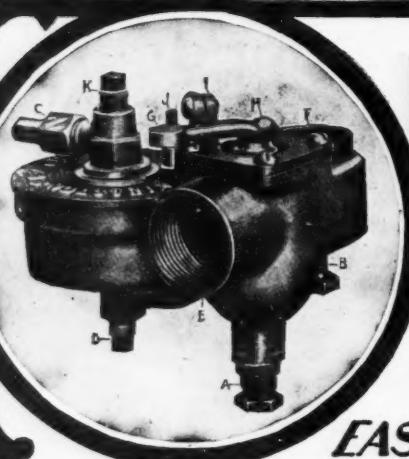
We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



**LINK-BELT  
Machinery Co.  
CHICAGO**

Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



## KINGSTON 1906 TYPE-K- AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.

Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.

Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.

Perfectly adapted to gasoline cars, boats, airships and motors for any kind of service.

Built for business by the oldest manufacturers in the business.

OVER 30,000 KINGSTON CARBURETORS IN USE

### KINGSTON MUFFLER

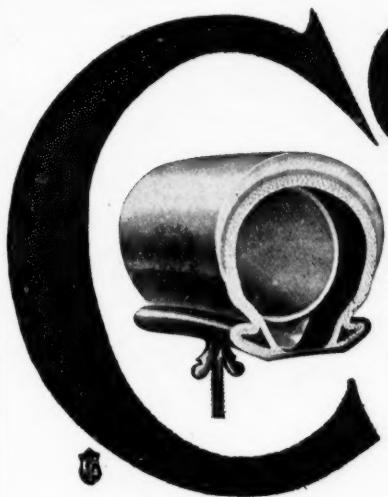


**IMPROVED  
FOR 1906**

BYRNE, KINGSTON & CO.,

KOKOMO, INDIANA, U. S. A.

# CONTINENTAL TIRES




"THE WORLD'S BEST"

First Chauffeur — There's one thing I hate to run over, and that's a baby.

Second Chauffeur—So do I; them nursing bottles raise Cain with tires!—"Puck."

#### BRANCHES

BOSTON, MASS., . . . . .	735 Boylston Street
BUFFALO, N. Y., . . . . .	729 Main Street
CLEVELAND, O., . . . . .	325 Huron St.
DETROIT, MICH., . . . . .	260 Jefferson Ave.

**CONTINENTAL TIRES**  
are not recommended for  
running over nursing bottles.

But for thousands of miles  
of rough road use they are  
**JUST WHAT YOU WANT**

#### The Continental Caoutchouc Co.

EMIL GROSSMAN, Gen'l Manager

#### 43 Warren St. - NEW YORK

FACTORY, HANOVER, GERMANY

#### AGENCIES

Chicago, Ill., Excelsior Supply Co., 237 E. Randolph St.  
New York City, Motor Car Equipment Co., 55 Warren St.  
Philadelphia, Pa., Jas. L. Gibney & Bro., 211 N. Broad St.  
San Francisco, Cal., Pacific Continental Tire Agency,  
Golden Gate Avenue and Gough St.  
St. Louis, Mo., Continental Tire Agency, 3908 Olive St.

16 H. P. Touring Car  
\$1,400

PERFECTLY SIMPLE  
SIMPLY  
PERFECT

8 H. P. Tourabout  
\$750

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made AS GOOD a record. No car AT ANY PRICE did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the SAME car up THREE TIMES.

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things MUST be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

**MAXWELL-BRISCOE MOTOR CO.**  
TARRYTOWN, N. Y.

Central Western Representative:

A. F. CHASE.

Foreign Representatives, (except Canada and Mexico) RICHARD IRVIN & CO., 25 Broad St., New York City.

Members of American Motor Car Manufacturers' Association.  
Agents in Principal Cities.

New York Agents:  
**MAXWELL-BRISCOE, INC.**

**"Firestone"**  
**Side-Wire Tires**

are used on nine-tenths of all the commercial vehicles manufactured. Why? Because manufacturers of commercial automobiles have learned by *hard experience* that the "Firestone" is the only tire that will withstand the hard knocks that are inseparable from commercial machines.

Firestone Tires wear like iron. They hold their shape—they give satisfaction.

**Then Why Not "Firestone?"**

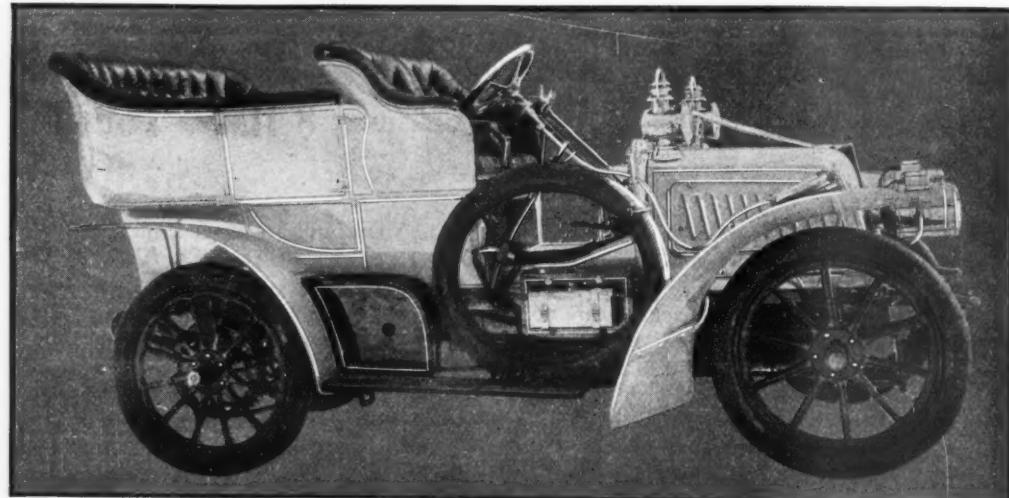
**Firestone Tire and Rubber Co., Akron, Ohio**

New York — Chicago Philadelphia Boston St. Louis  
San Francisco Los Angeles

---

# WORTHINGTON AUTOMOBILE COMPANY

547 Fifth Avenue New York City

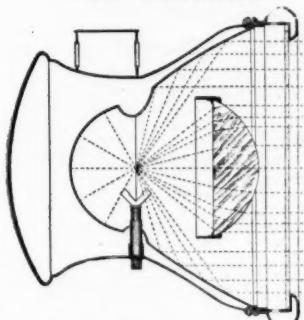


**24 h. p. Berg Touring Car**

**IMMEDIATE DELIVERY**

**MEMBERS A. L. A. M.**

# THE RE-INVENTION OF A RELIC

**The Ancient**

Abandoned by Rushmore ten years ago,  
patent expired.

FAILING IN THEIR EFFORTS TO IMITATE THE MODERN RUSHMORE SEARCHLIGHT, THE LANTERN MAKERS NOW TAKE UP THE ANCIENT DESIGN THAT RUSHMORE ABANDONED BEFORE AUTOMOBILES WERE KNOWN.

The best proof that the Rushmore Lens Mirror Searchlight has driven the lantern makers to the wall is the fact that they are now trying [to create a demand for the old] style metal reflector light fitted with a spherical cup and a little bull's-eye lens.

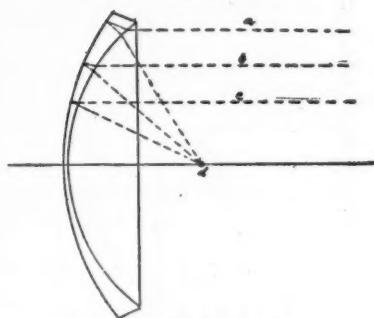
This "parabola-lens" reflector was patented and was manufactured by S. W. Rushmore over] seventeen years ago. The patent has expired.

Over a thousand large "parabola-lens" marine searchlights were sold by us, but we abandoned the design ten years ago when we perfected the aplanatic lens mirror, which is now the standard in all the navies of the world.

We guarantee the 8-inch Rushmore searchlight with a three-eighths foot burner to give more light than the big twelve-inch "parabola-lens" light with its big three-quarter foot burner. It is an eight to one proposition, The Modern against the Ancient.

A brand new reflector shows up pretty well on the first night it is lighted, but after that the silver plating blackens and no amount of scrubbing can improve it.

The drowning man grasps at straws. The drowning lantern maker makes a last effort to float himself on the time honored and abandoned metal reflector.

**The Modern**

Aplanatic Mirror, perfected by Rushmore ten years ago, now standard of the world.

**RUSHMORE DYNAMO WORKS, Plainfield, N. J.**

# Michelin

Tires of the highest class.

Copied but never equaled.

**MICHELIN TIRE AMERICAN AGENCY, Inc.**

6 WEST 29TH STREET  
NEW YORK

E. D. WINANS, Gen'l Mgr.

Telephones: 760-761 Madison Sq.

Branches in all large cities in the United States

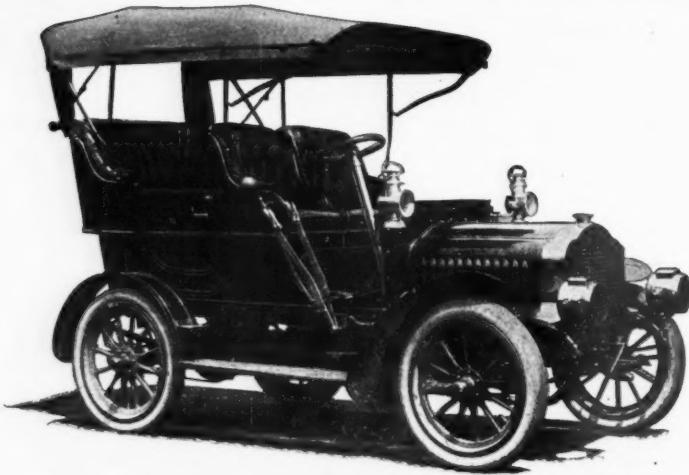
# Compound MOTOR CARS

1906 MODELS Now Ready for Demonstration

All Valves Interchangeable.

Positive Lubrication by Mechanical Force Feed Oiler.

Hand Forged Crank Shaft ground to size.



EQUIPPED WITH TOP AND HEADLIGHTS, \$1550

We should be pleased to refer anyone to many satisfied customers who are daily using Compounds  
Testimonials will appear from time to time in future advertisements

THE E. H. V. CO. : : Middletown, Conn.

12-15 H. P. Compound Motor.

Aluminum Body.

Sliding Gear Transmission, Three Speeds Forward and Reverse.

Can be furnished with either Shaft or Double Chain Drive.

# Pantasote

LEATHER

Gives leather effects, and rich, handsome finish to car.  
Absolutely water, grease and stain proof—can be kept clean with water and a sponge. Lasting and will never lose color—non-fading. From a durability standpoint it is the most economical material for all automobile and mackintosh uses.

PANTASOTE is proof against all climatic conditions  
Send for samples of the new and complete 1906 line

**The Pantasote Company**

11 Broadway  
NEW YORK

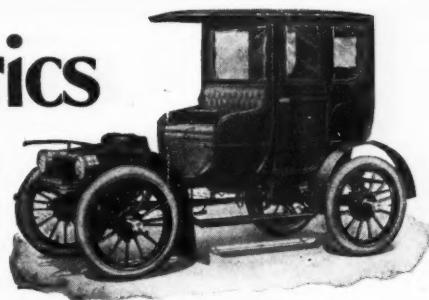
926 Monadnock Bldg.  
CHICAGO



Stanhope

## Baker Electrics

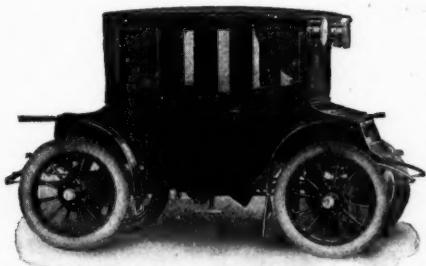
embody every possible good feature required to make them what they are so frequently called—



Depot Wagon

## The Aristocrats of Motordom

Every particle of material used is the best that money can buy. The workmanship is perfect, the upholstery and exterior finish superb. All wearing parts are equipped with ball bearings, reducing friction to the minimum and insuring smooth, easy running cars. The perfect mechanical construction of BAKER ELECTRICS enables us to use fewer battery cells than any other electric vehicle, at the same time securing greater efficiency and lowering the cost of maintenance. Their beauty of finish, quiet running qualities and simplicity of operation make BAKER ELECTRICS ideal for town use.



Inside-Driven Brougham

We desire agents in a few important cities not yet covered. Write for particulars.  
IMPERIALS, STANHOPES, SURREYS  
DEPOT WAGONS, BROUHAMHS

**The Baker Motor Vehicle Co.**

24 Jessie Street :: CLEVELAND, OHIO



Outside-Driven Brougham

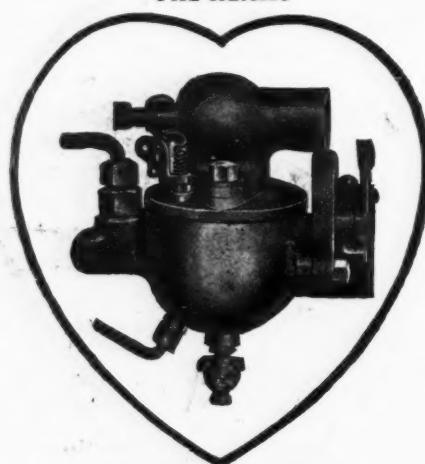
## PENNSYLVANIA CLINCHER

There are no perfect Motor Cars, nor any perfect tires—as yet;

But if you have a car which you consider almost perfect, perhaps you would like a tire fit to associate with it.

**PENNSYLVANIA RUBBER CO.**  
**JEANNETTE, PA.**

THE HEART



OF THE AUTOMOBILE

## The Schebler Carbureter STANDARD OF THE WORLD

Eighty-two automobile and marine engine builders in the United States and Canada have adopted the Schebler. All the carburetor manufacturers in America cannot show this record.

Seven sizes from  $\frac{1}{2}$ " to 3".

Schebler carburetor with balance throttle to be used with a governor.

Schebler two-cycle engine carburetors.

Schebler Special for Cadillacs.

Oldsmobile carburetors.

Ford two-cylinder carburetors.

Autocar Runabout carburetors.

Franklin Automobile carburetors.

Standard sizes for all other motors.

Special fittings for attaching the Schebler to above cars.

**Agencies in all the principal cities of the world**

### F. H. WHEELER

Manufacturer and Sales Agent

Indianapolis, Ind., U.S.A.

#### LIST OF AGENCIES.

P. J. Dasey.....	431 Wabash Ave., Chicago, Ill.	Factory Rep.
E. J. Edmond.....	44th St. and 6th Ave., New York City	
E. B. Belcher.....	26 Green St., Malden, Mass.	
Jos. Brassard.....	Central Falls, Rhode Island	
Ellsworth Foundry & Machine Shop.....	Ellsworth, Me.	
National Elec. Supply Co.....	Washington, D. C.	
Automobile Equipment Co.....	Detroit, Mich.	
Smith Electrical Engineering Co.....	Watertown, N. Y.	
The Wallace Bros. Co.....	Norfolk, Va.	
N. Philadelphia Auto Station.....	3425 N. Broad St., Phila., Pa.	
Auto Supply Agency.....	3939 Olive St., St. Louis, Mo.	
R. P. Bayley & Co.....	New Orleans, La.	
Consolidated Supply Co.....	Denver, Colo.	
Chandler & Lyon Motor Supply Co.....	503 Golden Gate Ave., San Francisco, Cal.	
Los Angeles Auto Co.....	Los Angeles, Cal.	
McCulloch & Boswell.....	Winnipeg, Man.	
Wilson & Co.....	Ottawa, Ontario, Can.	
Canada Cycle & Motor Co.....	Toronto Junction, Can.	
Turnbull & Jones.....	Dunedin, N. Z.	
Geo. Nell & Co.....	38 Fenchurch St., London, England.	

# Congratulations

From a dealer in a rough-road country on the service obtained from

## GOODRICH TIRES

WITH THE BAILEY TREAD

"We wish to congratulate you because of the splendid way your Goodrich-Bailey Tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use, but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, *the latter seems to be a sure thing on some tires that we know of.*

We are looking to 1906 Goodrich and expect to be partial to them because we believe they deserve it, if their previous reputation is any criterion to go by."—*Ashville Cycle and Auto Company, Sept. 23, 1905.*

**THE BAILEY "WON'T SLIP" TIRE.** Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slew-ing or skidding.

Rims branded in the channel with this copyright mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

**The B. F. Goodrich Co.  
AKRON, OHIO**

New York, 66-68 Reade St. and 1625 Broadway	
Buffalo, 73 Main St.	Cleveland, 420 Superior St.
San Francisco, 392 Mission St.	Chicago, 141 Lake St.
Boston, 161 Columbus Ave.	Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St.	Denver, 1444 Curtis St.
	London, E. C., 7 Snow Hill.

# A RECORD OF RECORDS

WE entered the Vanderbilt Cup Elimination Race for **only one** purpose.

We wanted to demonstrate that a **HAYNES Touring Car** could—and would—do in competition with racing monsters.

WE had been making what some people called extravagant claims for the **HAYNES**—and we wanted to prove them.

They **are** proven.

The **HAYNES** finished as neat a race as was ever witnessed and **won a place** entitling it to representation on the American Team.

The **HAYNES** will be **the** selling car of next season.

This record is conclusive evidence to the intending purchaser.

We want a few **good** agents.  
Write **quick** for particulars.

Orders for this car are booked in the order of their receipt.

---

## THE HAYNES Automobile Company

Members A. L. A. M.

Kokomo, Indiana

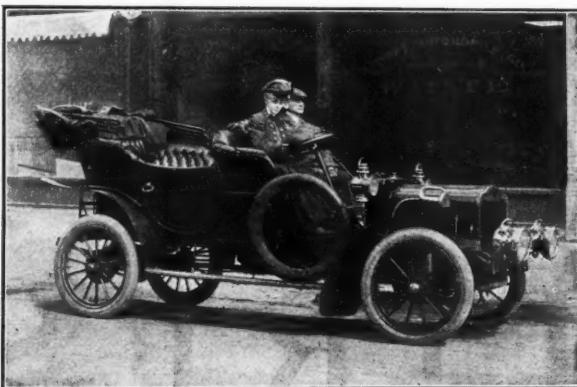
Chicago

New York

The Incomparable

# WHITE

The Car for Service



## ANNOUNCING BULLETIN No. 11

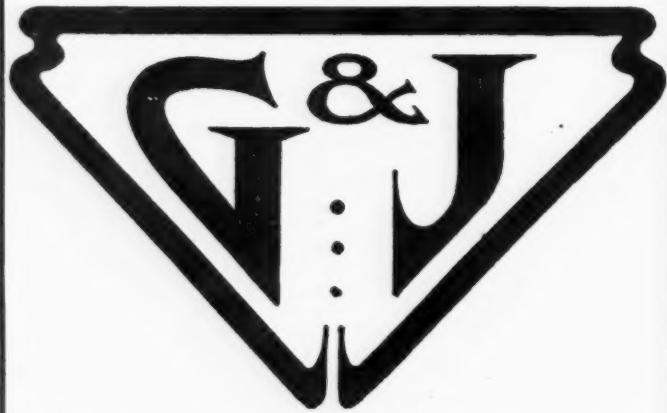
The most notable victory of the year scored by a stock car was the record trip of George A. Hensley in a White steamer from San Francisco to Los Angeles—a distance of 470 miles—in 21 hours and 12 minutes. This record superseded that of a 30 h. p. machine which had previously negotiated the distance in 24 hours and 56 minutes.

Three months have elapsed since Mr. Hensley's record drive and his record is still unapproached.

FURTHER DETAILS  
IN BULLETIN No. 11

**WHITE SEWING  
MACHINE COMPANY**  
CLEVELAND, OHIO

## REASON FOR RECORDS



# TIRES

On Saturday, Nov. 4, at the Indianapolis Fair Ground race track, Jap Clemens drove a regulation stock

## NATIONAL

car, equipped with

## G & J TIRES 100 MILES

in the World's Record Time

# 1:53:21 $\frac{4}{5}$

From start to finish not one moment was lost on account of tire trouble of any nature

**NO TIME IS EVER LOST  
BY USERS OF G & J TIRES**

Every Event at the Indianapolis Meet was won on G & J Tires

Get our new Tire Manual, free on request.

**G & J TIRE CO.**  
INDIANAPOLIS

Chicago Detroit Boston Cleveland Buffalo Denver San Francisco

## A RANGY LINE

# 1906 JACKSONS

### THREE MODELS

"C," "D" AND "G"

### RANGE OF PRICES

\$1250, \$1500, \$2500

### RANGE OF POWER FROM 18 TO 40 H. P.

### RANGE OF WHEEL BASE 90" — 100" — 108"

**Plenty of Style, Strength and Speed**

#### MODEL C

2 cylinders opposed, 5 $\frac{1}{4}$ "x5", motor under body, wheel base, 90 inches; chain drive.

Price, \$1250

#### MODEL D

A new model for 1906. 2 cylinders, 5 $\frac{1}{4}$ "x5", motor under hood; wheel base, 100 inches. The most powerful shaft drive, two-cylinder car on the American market.

Price, \$1500

#### MODEL G

40 h. p., 4 cylinder, 5"x5", wheel base, 108 inches. The most magnificently luxurious car of power ever marketed by an American maker.

Price, \$2500

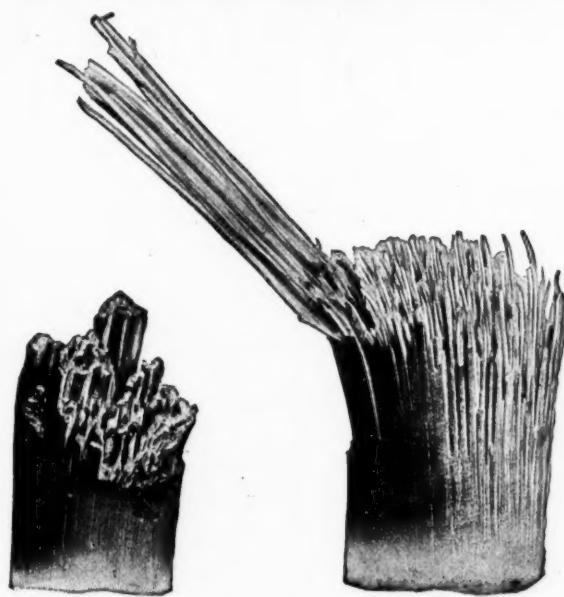
LARGE, ROOMY TONNEAUS TO ALL CARS. FINISHED AND UPHOLSTERED IN THE FINEST POSSIBLE MANNER THROUGHOUT. : : : : :

A Live Line For Live Dealers : : : : : WRITE

**JACKSON AUTOMOBILE CO.**

JACKSON, MICH.

"No Sand Too Deep. No Hill Too Steep."



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spokes.

## Talks on Wheel Making No. 6

*A bursted tire is robbed of its danger if the car is equipped with "Imperial" wheels.*

When you see an unpainted Imperial wheel examine it closely and you will be impressed not only with the fine quality of its hickory, but with the strength of the spoke arch construction and the careful attention which has been given to every minor detail of the general fitting of the wheel, as, for example, the unusual insurance afforded against accidental splitting of the felloe.

Our success in wheel making is based upon the high development and application of the fundamental principles of the art—not upon geometrical novelties.

*The excellence of "Imperial" wheels is based upon the perfection and refinement of orthodox methods.*

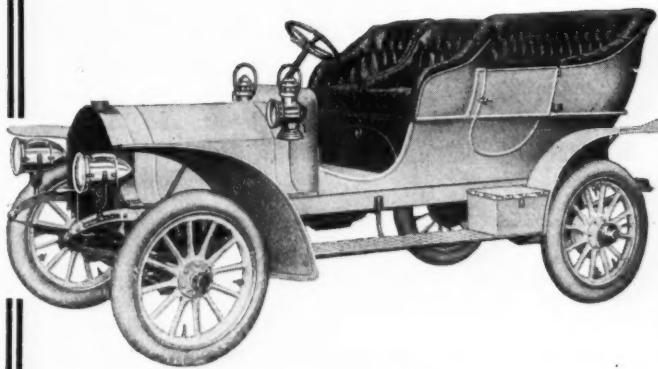
**IMPERIAL WHEEL COMPANY**  
FLINT, MICH.

Selling Agent HAYDEN EAMES Cleveland, Ohio

**KNOWLEDGE IS GOLDEN**

# 1906 Stoddard-Dayton

Model D



The material concerns from whom we order we buy only the best of everything throughout.

WE make the car from stem to stern and consequently that no car in the world can be better built.

Dealers who sell the STODDARD-DAYTON their only trouble lies in getting enough cars.

People who have bought Stoddard-Daytons in the past that THEY are satisfied in each and every particular

¶ There only remains to be said, that the 1906 Stoddard-Dayton is better this year than it was last.

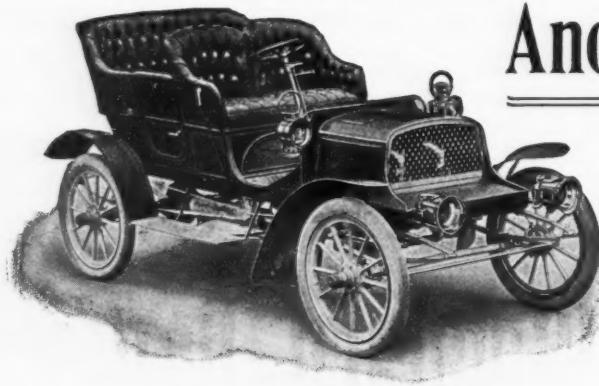
¶ What more can anybody want?

¶ Booklet ready. ... Catalogue later.

CHICAGO: McDuffee Auto Co.  
NEW YORK: Stoddard-Dayton Agency,  
60th and Broadway  
BOSTON: Randliff Motor Co.  
MINNEAPOLIS: Haynes Auto Co.  
INDIANAPOLIS: Frank L. Moore.

**Dayton Motor Car Co.**  
FACTORIES  
Dayton ... Ohio

# Another PREMIER Triumph



At the races held at Indianapolis Saturday, Nov. 4th, the PREMIER 16 H. P. *regular stock car* set a new mark for cars of its power, making 100 miles in 135 minutes without stopping, thus breaking all records in its class. In making this run *less than four gallons of gasoline* were consumed, and the last 20 miles were the fastest of the hundred. There was a variation of only 5 seconds between the fastest and slowest miles.

This same car, without a particle of adjustment, participated in five races immediately succeeding this performance, winning three firsts, one second and one third against cars all of which were *much* higher powered and priced.

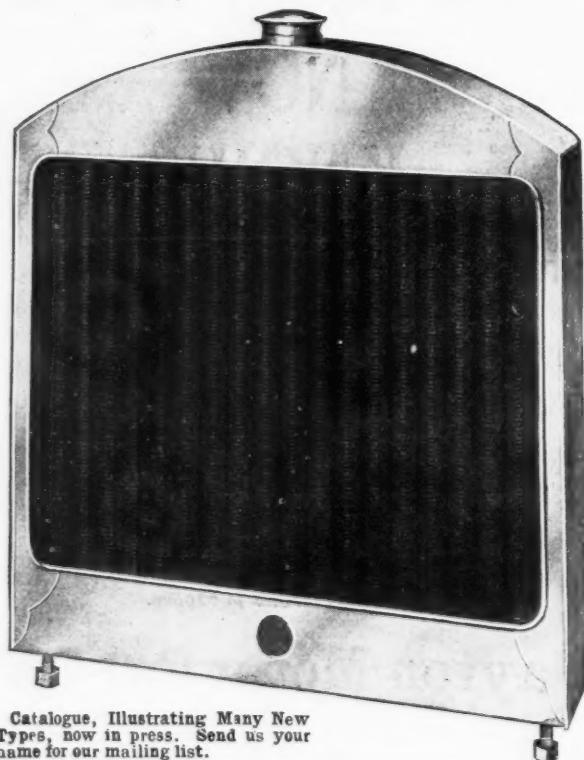
These performances demonstrate initial and continued good performance, speed, reliability and economy. No better evidence of superior merit can be adduced.

The Premier line for 1906, with its additions, offers highly attractive features. We would be glad to tell you about it if you will communicate with us.

**PREMIER MOTOR MFG. CO., 1001 Georgia St., Indianapolis, Ind.**

Members American Motor Car Manufacturers' Ass'n.

# ANNOUNCEMENT TO THE TRADE



Catalogue, Illustrating Many New Types, now in press. Send us your name for our mailing list.

Commencing Nov. 4th the Long-Turney Mfg. Co. of Rome, N. Y., began the manufacture of

## LONG SPIRAL TUBING RADIATORS AND HOODS

Heretofore these goods had been marketed EXCLUSIVELY by the Long Mfg. Co. of Chicago, but the unprecedented demand rendered it imperative that a plant be established in the East to aid in the handling of Eastern and Export Trade. The new company, which is under the management of Mr. George W. Turney (for the past 14 years with the Rome Brass & Copper Co.) has been licensed to use all patents, and patents pending, of the Long Mfg. Co. on Spiral Tubing, Radiators and Hoods.

LONG MFG. CO.,  
Chicago, Ill.

**LONG-TURNEY MFG. CO. ROME  
N. Y.**

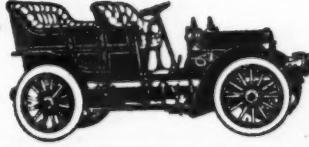
# Locomobile

The Locomobile Company of America, Bridgeport, Conn.

Member Association Licensed Automobile Manufacturers.



NEW YORK, Broadway and 76th St.  
PHILADELPHIA, 249 N. Broad St.



BOSTON, 15 Berkeley St.  
CHICAGO, 1354 Michigan Ave.



THEY MAKE ANY GOOD LAMP THROW THIS KIND OF LIGHT

Equip your cars with the  
**PREST-O-LITE GAS TANK**

No Waste  
No Odor  
No Attention



Tips Never Clog  
Nothing to Freeze

Burns as Many Lamps as Desired from One Tank

WHEN YOU WANT GAS, turn it on—WHEN YOU DON'T, turn it off. Tank will hold gas for months without loss. Every motor car owner or driver should write for our book of proof.

**PREST-O-LITE CO., - Indianapolis, Ind.**

Exclusive Licensees under patents of the Commercial Acetylene Co.  
AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL

## GAS-AU-LEC

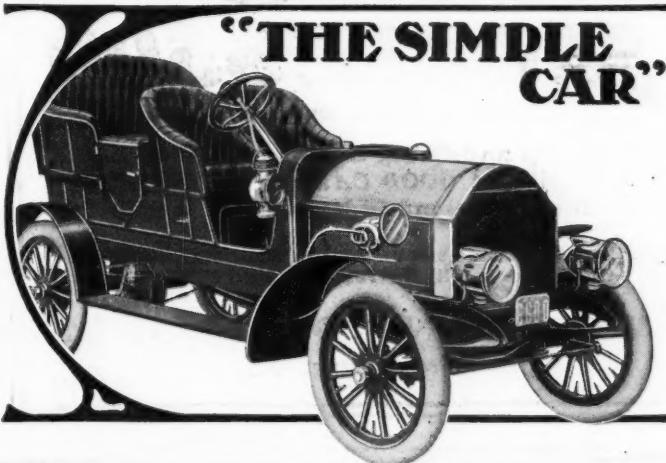
Elegant in Finish  
Luxurious in Appointments  
Built by Skilled Workmen from the best Materials Obtainable

**The Simplest Gasolene Car in the World**  
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

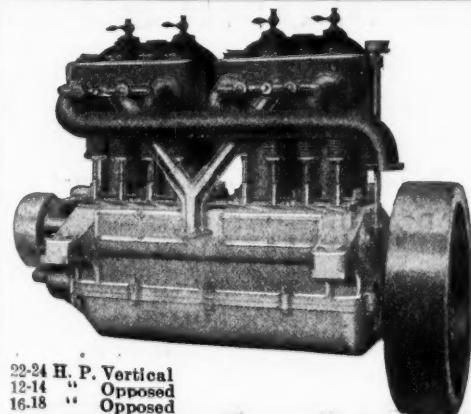
40-45 Horse Power, \$5,000

**Corwin Manufacturing Company**  
Peabody, Mass., U. S. A.



## "DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable.  
Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.



22-24 H. P. Vertical  
12-14 " Opposed  
16-18 " Opposed

**BEAVER MFG. CO., Milwaukee, Wis.**

Self-starting from the Seat

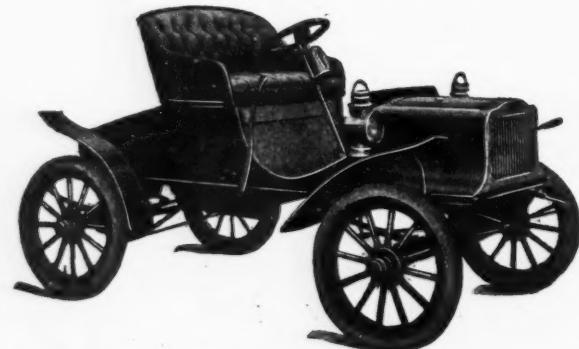
## Matheson

"America's Finest Motor Car"  
1906 Models—40 and 60 H.P.

Our New Factory now build-  
ing, in... **WILKES-BARRE, PA.**  
will be one of the largest and most modern automobile plants in existence. We will  
move into this new plant about January 1, 1906. Address until then.....

MATHESON MOTOR CAR CO.  
Holyoke, Mass.

### A TIMELY WORD TO DEALERS



### **THE GALE \$500**

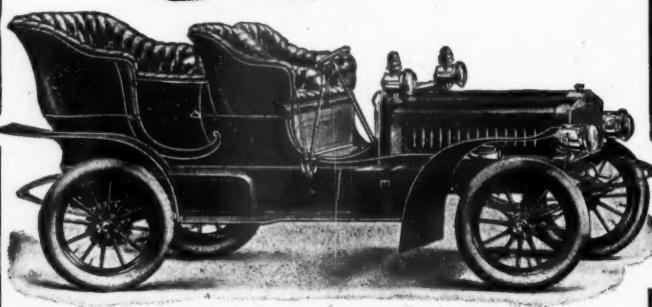
Will be a genuine sensation in 1906

Every Up-and-Doing Dealer knows the value  
of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for  
1906 ... It will interest you SURE. Address

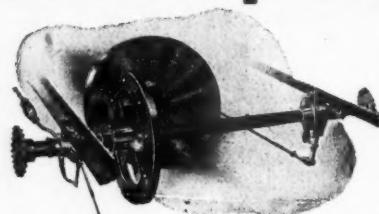
**WESTERN TOOL WORKS**  
*Galesburg, Ill.*

### **THE LAMBERT**



Model 7. 28-32 h. p., \$2,000

### **A 16 h.p. Runabout**

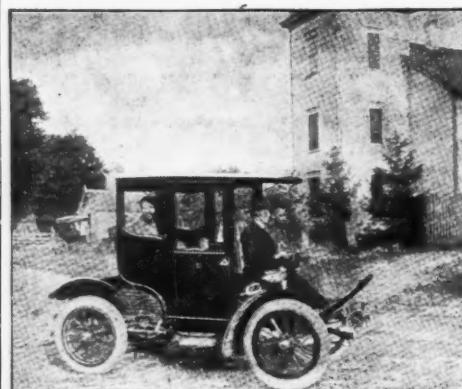


Our Noiseless Transmission

The most power-  
ful machine on  
the market, a  
1906 model.  
Write for specifi-  
cations.

**The Buckeye Mfg. Co.**  
**ANDERSON, IND.**

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION CHICAGO



### **TRAPPIST MONKS**

take a ride in the Adams-Farwell Car owned by Mr. Fred. C. Robinson,  
Grand Secretary of the Elks.

On July 30 the accompanying picture was taken during an outing at  
"The Monastery," thirteen miles west of Dubuque.

3 and 5 cylinder revolving motors :: 20-25 horsepower :: 40-45 horsepower

**NO WATER NO RADIATOR NO FAN**  
**NO FLY-WHEEL NO MUFFLER**

Six Models

*Send for Catalogue*

**The Adams Company**

Chicago Salesroom: 1536 Michigan Avenue

**DUBUQUE, IOWA**  
**U. S. A.**

# THE AUTO-METER

"BUILT LIKE A CHRONOMETER"  
TELLS THE SPEED OF TRAVEL TELLS THE DISTANCE TRAVELED

*Tells both with absolute accuracy*

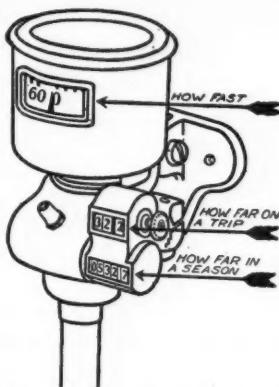
The Speed Dial, six inches wide and easily read, records the speed of a car from a fraction of a mile to sixty miles an hour and does it unerringly. The Trip Dial records the distance traveled on a trip or for a day. The Season Dial records the total distance covered in a season.

There is satisfaction in knowing how fast your car is traveling, satisfaction in knowing how far it has traveled. You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one. Ask him about it.

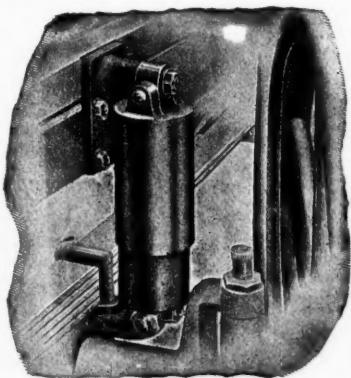
In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

**WARNER INSTRUMENT CO.** 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.  
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill. Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.



## Ride on Air



PATENT ALLOWED.

### On Good Roads

They allow you to use and enjoy the full elasticity of Easy Flexible Springs. Observe we say "full elasticity."

### On Bad, Dangerous Roads

They control the too violent spring play, BOTH UP AND DOWN. Observe we say "both up and down." They transfer the load and strain from the springs to the axles. They prevent spring distortion and breakage. They lessen the wear and tear on tires.

### There Are No Adjustments

This should interest you because: It adds to your comfort and safety. It effects a direct saving on "up-keep."

Write for full particulars.

**Kilgore Automobile Air Cushion Company**  
50 Columbus Avenue, BOSTON, MASS.

## KILGORE Automobile Air Cushion

---

### "Shock Eliminator"

The  
absolute best in Motor Lamps

### THIS SOLAR PARABOLENS HEADLIGHT

throws most powerful beam of any lamp made, yet burns cool. Simple, safe and sure, no better lamp, can be built. The most your dealer will say about the next best is that it is "just as good as a SOLAR"—but why not buy the standard and dodge the second best?

We stand back of every SOLAR lamp with a guarantee to you—a warranty that leaves no room for risk on the buyer's part. You can't buy better lamps—whether oil or acetylene.

*Write for booklet—or ask your supply man.*

**BADGER BRASS MFG. CO.**  
KENOSHA, WIS.  
New York Office. 11 Warren St.

HAVE YOU SEEN THE NEW

# KOKOMO

MECHANICALLY - ATTACHED



It is just what you have been  
looking for.

Quickly attached and detached.  
Creeping and Rim Cutting entirely avoided.  
Made of the very best material and workmanship  
throughout.

Write us for full particulars.

**KOKOMO RUBBER CO.,**  
KOKOMO, IND.



*Columbia*

## Electric Town Carriages NEW MODELS NOW READY

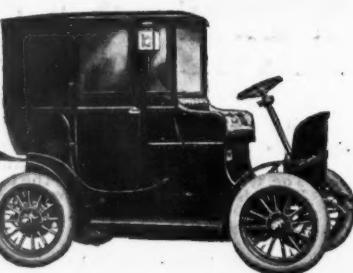
The cut shows the new Columbia Electric Brougham-Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

**ELECTRIC VEHICLE COMPANY**

Members Association  
Licensed Automobile  
Manufacturers



**Hartford, Conn.**

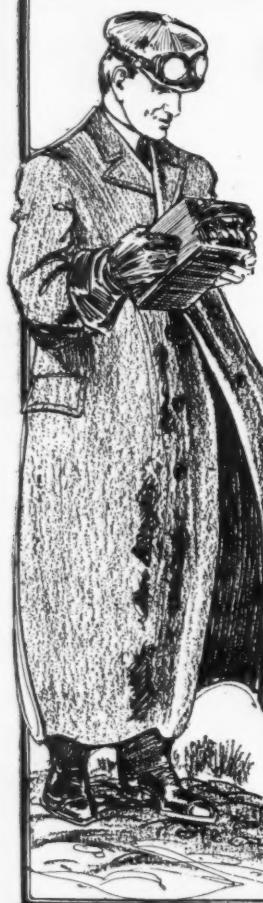
New York Branch: 134, 136, 138 West 39th St.

Chicago Branch: 1413 Michigan Ave.

Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.

Philadelphia: Pennsylvania Electric Vehicle Co., 250 North Broad St.

Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.



### My Troubles Are Over

No more "acid eaten clothing, foot mats, connections and cars."

The saving in this expense reduces the cost of the "Geegee" Battery by half over that of a liquid Storage Battery.

Scientifically designed and constructed throughout.

**Royal Battery Co.**

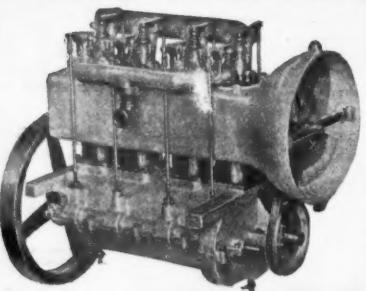
NEW YORK

National Sales Corporation

Factory Sales Manager

256 Broadway, New York

**WE HAVE IT**



Absolutely  
Tested

by all kinds  
of Herculean  
Work

Positively  
Proved

by six months  
of faultless  
performance

Cylinders surrounded  
by Hood with Fan  
connection on outer  
end, blowing a  
**CONTINUOUS HURRICANE**  
OF COLD AIR AROUND AND  
OVER TOP OF CYLINDERS  
Write for Descriptive Particulars

**TREBERT**  
THE ROYAL GAS ENGINE COMPANY

#### THE DETAILS

15 H. P., developed at 1500 revolutions.  
Bore and stroke, 3½ x 4 inches.

Length of Motor over all, 29 inches.

Crank Shaft diameter, 1⅓ inches.

Total bearing surface on Crank Shaft, 10½ inches.

Bearing on Connecting Rods, 2x1½ inches.

Bearing on Wrist Pin, 1¾ x 1½ inches.

Connecting Rods of drop forgings with phosphor bronze Crank Shaft.

Base and Crank Case of Aluminum.  
Width of Motor from end of arm to end of arm, 19½ inches.

Center of Crank Shaft to bottom of Motor, 4½ inches.

Center of Crank Shaft to top of Motor, 18 inches.

Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.

Total Weight, 225 lbs.

Lubrication by Splash Feed and constant level automatic lubricator.

**TREBERT GAS ENGINE CO.**

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES  
BUILDERS OF TRANSMISSIONS AND CLUTCHES :: LIGHT POWERED CARS REBUILT

REFERENCE: JOHN WANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

## FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

CAN BE MADE OUT OF THE

### KOKUK FABRICS

A GUARANTEE

With All Goods  
Bearing This

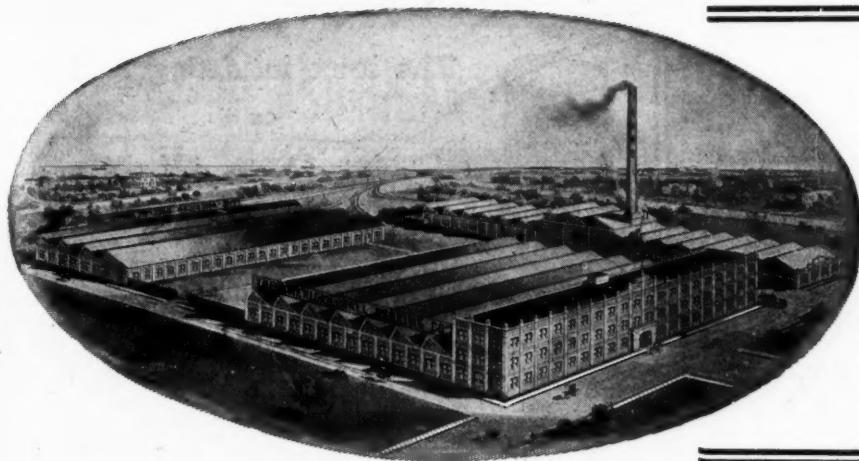
TRADE MARK



MANUFACTURED EXCLUSIVELY BY

**F. S. CARR**

74 Pearl Street, BOSTON, MASS.



The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

**THE AMERICAN BALL BEARING CO.**  
L. S. & M. S. Railway and Edgewater Park  
**CLEVELAND, OHIO, U. S. A.**

## Hill Precision Oilers

The first requisite in a mechanical oiler is **efficiency**. To be **efficient**, it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is **economy**.

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

**THE OSCAR LEAR AUTOMOBILE CO.**  
Automobiles  
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

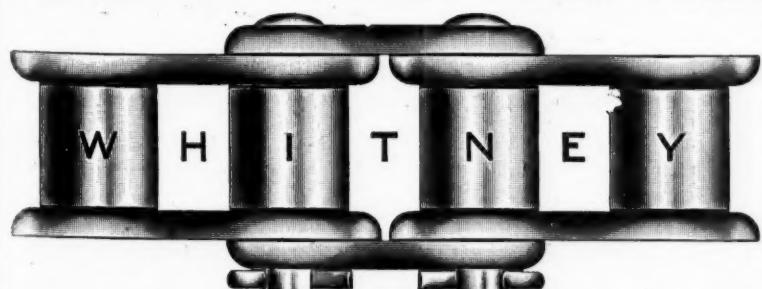
*The Steel Ball Co., Chicago, Ill.*

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAZER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

**THE STEEL BALL COMPANY**  
840 Austin Avenue  
CHICAGO ... ... U. S. A.

### 1906 Model "WHITNEY" Detachable Roller Chain—Patented



**THE WHITNEY MFG. CO., Hartford, Conn.**

## WANTED

Manufacturing concern having recently purchased large commercial motor vehicle works, is preparing to extend operations on a greatly enlarged scale for 1906, and wants

**CAPABLE REPRESENTATIVES  
FOR EASTERN TERRITORY**

**OFFICE MANAGER**

(Must be proficient in double entry book-keeping)

**EXPERIENCED CORRESPONDENCE MAN**

**SUITABLE REPRESENTATIVE  
FOR FOREIGN TRIP**

All departmental heads and prominent attaches must become financially indentified with the business.

**Address**  
**"COMMERCIAL"**  
CARE OF MOTOR AGE, CHICAGO

Investigate "Whitney" Standards for dimensions of Roller Chains. They have been adopted by most of the leading American Automobile Manufacturers and have been recognized by other chain manufacturers at home and abroad. If they are made universal six sizes of chain can eventually take the place of over thirty sizes used in the past.

Our new line of chains for 1906 Model Cars have been adopted by a large number of the leaders and they are making remarkable records for quiet running and efficiency.

If interested send for new catalog dat'd November, 1905.



## KNOX CARS Deliver the Goods

They run all day long any day in the year, being air-cooled by the only perfect system extant.

They furnish the quickest and the cheapest method of local delivery.

Every wide-a-wake merchant should

**Buy a Knox Waterless Car  
Save Money and Be Up-to-Date**

A handsome Knox car is an effective advertisement of any business. Besides, it is sure to give absolutely reliable service.

Concise pamphlet, "Commercial Car Tests," on request. Free demonstrations on request at our agents. Agents in all principal cities.

**KNOX AUTOMOBILE CO., Springfield, Mass.**

Largest and Oldest Manufacturers of Gasoline Commercial Cars  
Member of A. L. A. M.

The long insulating surface  
on the

## "Soot-Proof" Plug

makes it impossible for the current to traverse a short circuiting deposit of soot in preference to jumping the spark-gap.

Since to do the former would involve overcoming a much higher resistance than applies in the latter case.

A constant

## "Big Fat Spark"

Oil, Heat and Soot-Proof, non-short circuiting self-cleaning.

**C. A. MEZGER**

**203 W. 80th St.**

**NEW YORK**

## The Care of the Car

Washing the body of the machine, keeping the polished surface free from lubricator, road dust and gutter muck is just as essential to the life of an Automobile, as is the attention given the running gear.

*Mobo*, the new cleanser for Automobiles, will easily and quickly remove grease, dirt and grime and all traces of a hard run, without dulling or scratching the highly polished surface.

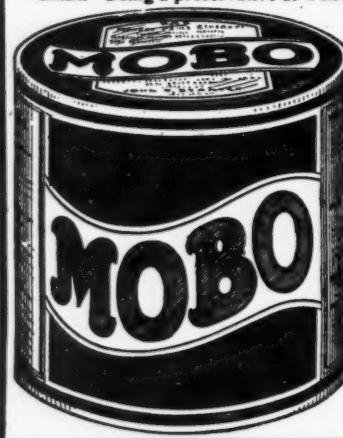
# MOBO

is unlike common soap, as it positively contains no free alkali. Being a preservative as well as a cleanser, it prevents varnish or paint from peeling or cracking, and adds a fine gloss to the surface.

*Mobo* may be used with profit on leather goods, harness or woolen fabrics. Cannot harm the most sensitive skin, as it is a purely vegetable oil preparation and absolutely contains no free alkali. Put up in 2-lb. and 8-lb. cans; also in tubs, half barrels and barrels.

If your supply man does not keep *Mobo*, send us his name and address, and we will see your wants are supplied.

**JOHN T. STANLEY**  
**New York.**



## THE Gray Autochime

PATENTED

### Most Practical of Automobile Alarms

Is rapidly forging to the front in popular favor. It is blown from the exhaust, giving a deep, rich, musical tone pleasing to all ears, is operated by a foot pedal, and being small and compact takes up little space.

It is made of finely polished brass, has no soldered parts to melt or jar loose and is very durable.



Your horn cannot be stolen  
if you use an Autochime

Why not order one TODAY?

**PRICE ... \$15.00**  
Including all attachments

**Gray-Hawley Manufacturing Company**  
...605, 607, 609 Fort Street West...  
Detroit, Mich.

**THE  
STANDARD AMERICAN COOLER**

# The Whitlock Cooler

Was used on the *Locomobile Racer* that finished third in the *Vanderbilt Cup Race*. It was never touched during the race. *It did its full duty.* It held its water and kept the engine cool.

#### THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY**. The leading makers of automobiles have recognized this fact by adopting

#### **THE WHITLOCK COOLERS**

continuously for the seasons of 1903, 1904, 1905 and 1906.

### The Whitlock Coil Pipe Co.

Hartford ... Conn.

# "20<sup>TH</sup> CENTURY SOAP"

One  
Pound  
Can  
10c

3½  
Pound  
Pail  
25c

15  
Pound  
Pail  
75c

Invaluable for ALL  
Cleaning Purposes  
About a Garage

Nothing can compare with it for  
cleaning and polishing the highly  
finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly  
Pure Vegetable Oils.

#### ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made  
are beneficial to the skin, and keep  
the hands in good condition.

**TRY IT TO-DAY**

Keeps  
Your  
Car  
Bright

Keeps  
Your  
Car  
Clean

Makes  
Old  
Cars  
Look  
Like  
New

# GARFORD TOURING CAR PARTS

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

**REAR AXLE:** Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube

**FRONT AXLE:** I-Beam Section Nickel Steel Bed, Ball or Plain Bearing

CHANGE GEAR  
STEERING GEAR

CLUTCH

DISTANCE ROD AND BRACKET  
PROPELLER SHAFT  
LEVERS FOR EMERGENCY-BRAKE AND  
CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 h. p.

Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 h. p.

*Write for Circular No. 12.*

**THE GARFORD COMPANY, ELYRIA, OHIO**

Sales Manager: HAYDEN EAMES, Cleveland, Ohio

# FIREPROOF



PORTABLE  
**AUTO  
HOUSES**

#### MADE ENTIRELY OF STEEL

Protects your car and your property.  
Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.

DOES NOT CONFLICT WITH FIRE ORDINANCES.

DOES NOT BECOME A PART OF THE REAL ESTATE.

Easily erected by unskilled labor and can be moved as often as desired.

By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.

We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

**The Lloyd Iron Roofing & Paint Co.**  
107 West Monroe St. :: Chicago, Ill.

**HOFFHEIMER SOAP CO.**  
CHICAGO

## The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an Elmore.

# Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces two impulses every time the flywheel turns. As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

**THE ELMORE MFG. CO.,** 804 Amanda Street CLYDE, OHIO

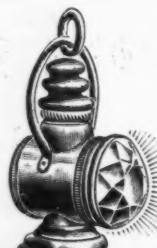
## Latest European Novelties

### RACING CAR No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on request.



### AUTOMOBILE JEWELRY



No. 5361. Full Size.

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

### CHARLES E. MILLER

Manufacturer, Jobber,  
Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES

Broadway and 36th St., New York 318-320 N. Broad St., Philadelphia  
20-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio

## Talkin' of the Cost of Up-Keep

THE ROYAL Tourist Cars are run by their owners at less repair expense than any other motor cars built. You simply do not have repairs. Ask an owner of a Royal how much it costs him to maintain it. Then compare his figures with any other car, big or little, touring or runabout. Royal owners everywhere. Ask one.

Why is this? Every part is put together with proper care. Money is freely spent for best materials. That's why.

That is also the reason why we were able to roll our cars over in the Vanderbilt Trials and finish among the first.

# ROYAL

**THE ROYAL MOTOR CAR CO.  
CLEVELAND, OHIO**

AGENTS

C. A. Duer & Co., 58th St. and Broadway, New York	G. J. Dunham, 182 Columbus Ave., Boston
The M. Duffee Automobile Co., 1449 Mich. Av., Chicago	G. W. Caplin, 424 So. Fifth Street, Minneapolis
Automobile Supply Co. Ltd., 24 Temperance St., Toronto	Motor Shop, 317 N. Broad St., Philadelphia
Westminster Automobile Co., 4396 Olive St., St. Louis.	

## MOLINE 1906

### MODEL "A" 30-35 Horse Power. \$2500.00

Four-cylinder, water-cooled motor. Interesting features—110-inch wheel base, 34-inch wheels with 4-inch tires, pressed steel frame, three speed sliding gear transmission, mechanical oiler, and large roomy body of handsome design.

### MODEL "C" 18-20 Horse Power. \$1750.00

Practically the same construction as above, except on a smaller scale. Four-cylinder vertical water-cooled motor, 100-inch wheel base, 32-inch wheels with 3 1-2 inch tires, neat new design of double side entrance body.

### MODEL "G" 16 Horse Power. \$1000.00

Double opposed motor under the body, plenty of radiation, lots of bearing area, new design of water pump, mechanical oiler, 86-inch wheel base, running boards at side, and detachable side entrance tonneau body.

*Advance circular ready for distribution*

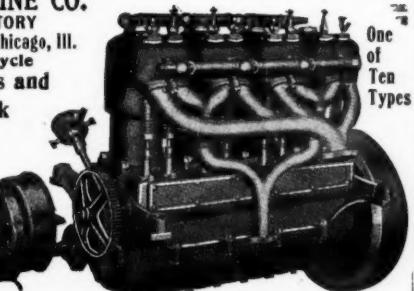
**Moline Automobile Co.  
East Moline, Ill.**

**MOTORS — All Commercial Sizes****CONTINENTAL ENGINE CO.**NEW OFFICE AND FACTORY  
Cor. Kingsbury & Huron Sts., Chicago, Ill.  
 $1\frac{1}{2}$ -40 h. p. 2 and 4 cycleDesigns, Specifications and  
Special Contract Work

OUR SPECIALTY.

4-Cyl. air cooled,  
weight 90 lbs.,  
total. 3 Cyl. air  
cooled, 75 lbs.  
total.

Telephone North 1807



VERTICAL AND HORIZONTAL

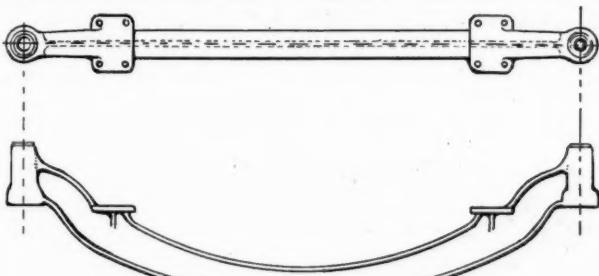
Non-breakable  
Manganin  
Mirror Lens  
Searchlight  
Projector  
with swinging  
bracket. Burns  
acetylene gas.The handsomest  
and most powerful  
of all light projectors—**The Neverout**  
TRADE MARK**Mirror Lens Searchlight**The gas it burns is best furnished by the new *Neverout*  
Patent Safety Gas Producer

Makes gas only as needed and the flame is steady and intensely white.

Write for free illustrated catalogue.

**ROSE MFG. CO.**

912 Arch St. Philadelphia



The Winton Front Axle Casting of Parsons' Manganese Bronze

Fifty thousand pounds of Ingots furnished for the 1906 Cars.

The William Cramp &amp; Sons Ship &amp; Engine Building Company

PHILADELPHIA, PENNA.

**MUD**  
FORGET IT AND USE  
**WEED'S TIRE GRIPS.**  
POSITIVELY STOPS SLIPPING OR SKIDDING.  
THEY MAKE BAD ROADS GOOD.  
WEED CHAIN TIRE GRIP CO.  
SEND FOR BOOKLET "C"  
28 MOORE ST.  
NEW YORK CITY.

## WE ARE IGNITION SPECIALISTS

If you have any trouble with your ignition, write to us and we will tell you just what to do. We make more than 80 different articles for ignition purposes, including our

## Apple Storage Battery Charger

A perfect storage battery charger. Gives a strong, steady current that never fails. No trouble to put on any car or engine; our friction driving gear makes installation easy. See that your entire car has an Apple electrical equipment.

FOR FULL INFORMATION WRITE

The Dayton Electrical Manufacturing Co. 75 Beaver Bldg.  
DAYTON, OHIO.**THE Apple**

Storage Battery Charger

**STOLP COOLERS****GOOD COOLERS****Stolp Mfg. Co.  
CHICAGO**

Patents Pending

**LATEST TYPE WILLARD LATEST TYPE  
STORAGE BATTERIES**Are operating Electric  
Automobiles Regularly!

75 MILES AND OVER ON ONE CHARGE

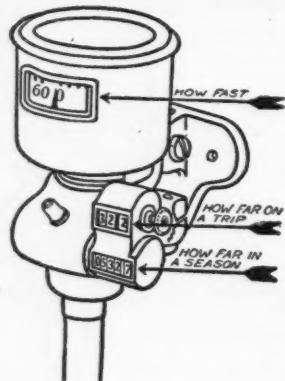
Write for Particulars

The Willard Storage Battery Company  
Cleveland, Ohio**Automobile Bows**Victoria  
Oval Top Express.  
Flat Top Express.  
Buggy Bow.**ARE BEST**

made of tough second growth ash, because they are light, durable and retain their shape well. We make them any size, any width and any height. Are in position to fill orders promptly and solicit your inquiries.

**S. N. BROWN & CO., Dayton, Ohio**

# THE AUTO-METER



on a car tells the speed of travel and the distance traveled. It is absolutely accurate.

**"Built Like a Chronometer."**

When you are whirling along, a glance at the Auto-Meter before you, tells you exactly how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour. When a trip is finished, the Auto-Meter tells exactly how many miles you have gone on that trip. When the season is over the Auto-Meter tells exactly how many miles you have covered during the season. All this is worth while. Is it not? Get acquainted with the Auto-Meter. It will lead to lasting friendship. Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners.

**WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston, Mass.  
Northern California, G. P. Moore & Co., San Francisco, Cal.

Warner Instrument Co., 1691 Broadway, New York City, N. Y.  
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.  
Southern California, Heineman & Pearson, Los Angeles, Cal.

## A New Era in Carbureters



THE GARILLUS AUTOMATIC CARBURETER is a perfectly automatic carbureter, without a float, without compensator, easy to start, sure to run. So simple it cannot get out of order. Greatest economy. Highest efficiency. An easy starter on four cylinder engines. Money refunded if not satisfactory.

The Goddard Machine Co., Holyoke, Mass., says: "The GARILLUS CARBURETER gives a 10 per cent higher efficiency than any carbureter we have tried, producing in a test two h. p. more than the..... and one h. p. more than the..... We believe in it thoroughly." (These were two prominent float feed carburetors.)  
For further particulars address  
**THE WINKLEY COMPANY, P. O. Box 243, Detroit, Mich.**

## Monogram Oils

....Made by....

**Columbia Lubricants Co. of New York**

78 Broad Street, New York City

**"FIRST AID TO AUTOMOBILES"**

**DISTRIBUTING DEPOTS**

....Also at....

Boston Cleveland Washington Chicago  
Denver San Francisco and Toronto, Canada

## Synnestvedt Machine Company

Pittsburg, Pa. :: Manufacturers of

## Electric Vehicles



Delivery Wagons  
Trucks  
Stanhope  
Surreys  
Busses

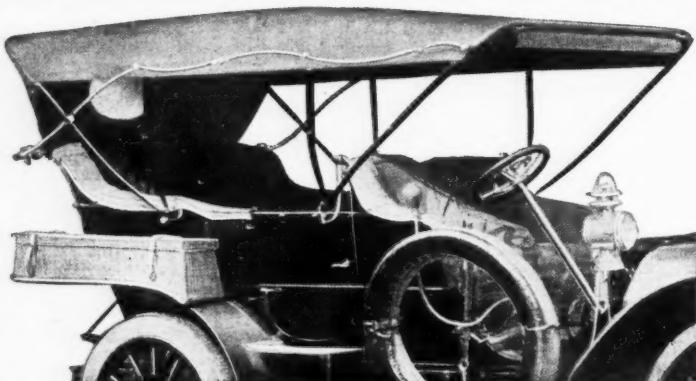
Eastern Branch, 1005 Drexel  
Bldg., Philadelphia.  
Commercial Automobile Co.,  
Distributors, 13-6 Michigan  
Ave., Chicago.

## Veeder ODOMETERS

For \$10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for \$25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know  
How Far You Go."

**THE VEEDER MFG. CO., 25 Sergeant St., Hartford, Conn.**  
Cyclometers, Odometers, Tachometers, Counters and Fine Castings.



## WE CAN MAKE POOR TOPS BUT DON'T

LONDON TOPS are correctly designed for each model car—are built in the best possible manner to stand the wear and tear a top is subjected to. Heavy bows, reinforced, stayed and cross stayed, padded to give proper shape, front and back stay straps, with or without joints.

**The Best Possible in Top Construction**

Each top has Detachable Roll Front, Front Side, and Side and Rear Curtains, with ample celluloid lights—ready to attach to cars.

**London Auto Supply Co., 1229 Michigan Ave.  
CHICAGO**



Tire Fastener for Heavy Work

Save Time, Money and Trouble and  
GET MOST WORK out of

# MOTZ CLINCHER TIRES

Solid Rubber or Cushion Types  
and made to fit any standard clincher  
rim in which pneumatic tires are used

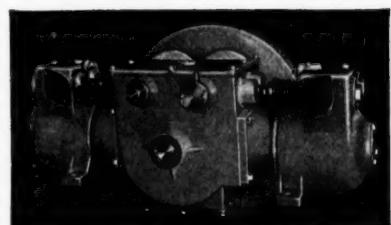


Tire Fastener for Ordinary Work

RESILIENT AND  
"THERE WITH THE WEAR"

The Motz Clincher Tire & Rubber Co.  
AKRON, OHIO, U. S. A.

25 H. P. Vertical      16 H. P. Opposed  
**High-Class Automobile Motors**

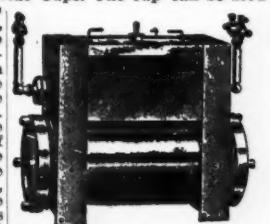
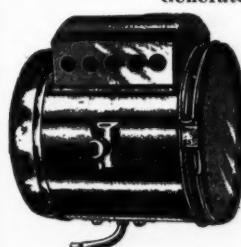


The  
A. Streit  
Machine  
Co.

CINCINNATI  
OHIO

## COLUMBIA SEARCH LIGHTS AND GENERATORS

Generator No. 3 - Capacity 54 oz.



Models: A—5-in. Mirror Lens.  
B—6-in. Mirror Lens. C—7-in.  
Mirror Lens. D—8-in. Mirror  
Lens. With Adjustable Burners

Will supply from one to six burners. Equipped  
with two Carbide Cups. One cup can be used  
on from one to six burners, keeping the  
other in reserve, or both cups can be used at the  
same time. When large quantities of  
carbide are used in the generator, considerable  
heat is evolved, and it is desirable to keep the generator as cool as possible.

We guarantee our Generators to be better than  
most, and as good, if not better, than any.

HINE-WATT MFG. CO., 58-60 Wabash Ave. Chicago

## IMPERIAL WIXON Compound Air Pump



The pump with the largest capacity.  
The easiest pump to pump.  
The best pump for automobilists.  
You need not buy it until you have tried it.  
It saves tire troubles.

**\$5.00 ON APPROVAL**

Ask any dealer or write us. Do it now.

**THE IMPERIAL BRASS MFG. CO.**

249 S. Jefferson Street, CHICAGO

Motor Car Equipment Company, 55 Warren St., New York  
Sole Export Agents



## 1905 - VESTA - 1905 Ignition Battery

4 Volt, 60 Amp. hours  
9½x3¾x8½. Price, \$18.00

6 Volt, 60 Amp. hours  
9½x5½x8½. Price, \$27.00

8 Volt, 60 Amp. hours  
9½x7x8½. Price, \$36.00

Satisfaction Guaranteed by

**VESTA  
ACCUMULATOR CO.**

1336 Michigan Avenue, CHICAGO

Phone South 962

Eastern Agents, THE R. E. HARDY CO.

225 W. Broadway, New York

## HIGHEST GRADE ONLY Aluminum Castings

**THE ALLYNE BRASS FOUNDRY CO.**  
CLEVELAND AND DETROIT

## Soot Proof

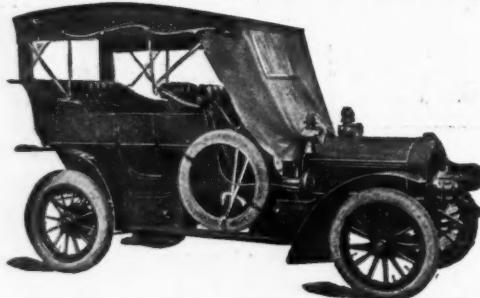
"Sometimes they try a cheaper plug for a little while but they always come back to the 'Soot-Proof,'" writes a Wayne, Pa., dealer. "It is the Spark Plug that we can conscientiously recommend." That tells the story for any dealer.

Besides being soot-proof it is also wear-proof for six months of ten hours a day. Guarantee with every plug.

All sizes at dealers or by mail \$2. Write for booklet.

**C. A. MEZGER, 203 West 80th Street, New York**

## CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO, INDIANA

**1906  
MODELS**  
*Now Ready*



Model E. 30 H. P. Glide, Vertical Four Cylinder Motor

WRITE FOR CATALOGUES OF THESE NEW MODELS  
The BARTHOLOMEW CO., 415 Bradley Av., Peoria, Ill.  
Chicago Representatives, Holmes-Schmidt Motor Co., 1502, Michigan Ave.

**MOSLER "SPIT-FIRE" PLUGS**

THEY ACTUALLY "SPIT-FIRE" WHILE OTHERS SPARK ONLY  
(Facilitates Sparking. Makes Plugs Spit-Fire  
BASE Acts as Condenser of Electricity.  
Protects Insulation and Sparking Points.)

Standard Size, \$1.50, Postpaid. Special, \$2.00

MOSLER Positive RELIABLE BREAKER  
CIRCUIT  
With Patented Protector, \$.50 additional.  
Used by the Leading Manufacturers  
INSIST upon Name and Patent Dates  
BEWARE of Valueless Imitations.

The Mosler Timer  
is constructed on  
a Scientific Basis

WRITE FOR LIBERAL DISCOUNTS

A. R. MOSLER 1679 Broadway  
New York**Baldwin Automobile Chains and Sprockets**

Best Material

Accurate  
Construction

SEND FOR CATALOGUE

BALDWIN CHAIN & MFG. CO. WORCESTER  
MASS. ....K. Franklin Peterson, Western Sales Agent  
166 Lake Street, Chicago, Ill.**STORM APRONS**

Runabout size, 2 openings.....	\$7.50
Tonneau size, 4 opening.....	11.00
Touring Car size, 5 openings.....	13.50
Capes, 1 opening.....	2.00

Our Storm aprons are made of heavy-weight rubber cloth with plaid back. Prices include fastenings for attaching to any machine. Terms—Cash with order. Money back if you are not satisfied.

Weed Chain Tire Grips  
Send us the size you need and we will quote you a low price.  
Mr. Dealer: Write us for our "Special Deal" on above goods.  
THE BALL-FINTEZ CO., Newark, N. J.

**WITHERBEE****Weston Electrical Instrument Co.****Electrical Measuring  
Instruments for use in****Electrical Carriages and Charging Stations**

Send for Catalogue

Main Office and Works: **Waverly Park, NEWARK, N. J.**

New York Office, 74 Cortlandt Street

**Storage Batteries****Are guaranteed to give satisfaction  
or purchase money will be refunded**

With our economy recharging outfit you can recharge your batteries either in your home or office. Write for descriptive pamphlet.

FOR SALE BY THE LEADING JOBBERS

**WITHERBEE IGNITER CO.**

27 THAMES STREET NEW YORK

**Gilbert Auto  
Fabric Supplies**  
LOOK FOR THE NAME  
FOR SALE AT LEADING  
SUPPLY HOUSES. CATA-  
LOG SENT ON REQUEST.  
The Gilbert Mfg. Co.  
New Haven, Conn.

**A LUBRICATOR FOR ANY CAR, ANY SYSTEM**  
An automatic pressure feed oiler, instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.  
Made with any number of feeds. Write for circular.  
Manufactured by  
J. T. PEDERSEN, 642-644 First Ave., N.Y.

# THE "Exide"

CLEVELAND, 404 Huron St.  
NEW YORK, 49th St. & 8th Ave.  
PHILADELPHIA, 250 N. Broad St.  
Buffalo, Cleveland Automobile &  
Cycle Co., 649 Main St.

ROCHESTER, 150 South Ave.  
BOSTON, 39 Stanhope St.  
DENVER, 1449 Clarkson St.  
SAN FRANCISCO, 635 Howard St.

## BATTERY for Electric Vehicles

DEPOTS FOR THE PROMPT DELIVERY  
AND CARE OF EXIDE BATTERIES:

CHICAGO, 204 E. Lake St.  
ST. LOUIS, 3944 Olive St.  
ST. PAUL, 372 Minnesota St.

DETROIT, 265 Jefferson Ave.  
PITTSBURG, 5905 Centre Ave.  
SAVANNAH, 309 Bull St.

MINNEAPOLIS, 3d Ave. S. & 5th St.  
PASADENA, 33 S. Raymond Ave.  
PORTLAND, ORE., 140 Fifth St., N.

## THE ELECTRIC STORAGE BATTERY CO.

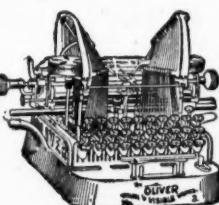
### WE ARE SOLE IMPORTERS OF NIEUPORT IGNITION OUTFIT

The Best in the World.

Magneto, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire  
ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.

### We Want Agents for the **OLIVER** Typewriter *—the standard visible writer—*

in cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver  
Typewriter  
Co.

100-200 WABASH AVE.,  
CHICAGO, ILL., U. S. A.

Foreign Office  
15 Queen Victoria St.,  
London, England.

### 1905 YANKEE GRADE METER. PRICE \$7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

### YANKEE MICA SPARK PLUG. PRICE \$1.50.

Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

## Dust Guards

Make Motoring  
a Clean Sport

For \$20.00 I guarantee automobileists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN

124 W. Jackson Blvd., CHICAGO, ILL.



## "TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasoline.

### SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

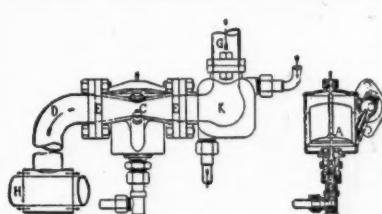
The "Triumph" Gasoline Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

## Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass.

OFFICE: 613 Old South Bldg.

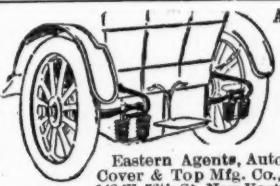


## G. & A. CARBURETTORS ARE GUARANTEED AUTOMATIC

By actual tests of the leading French makers. Float Feed Carburetor without complicated parts in many so-called "Automatic Carburetors" gives constant mixture at all speeds of motor.

### FURTHER INFORMATION ON APPLICATION

ASTER CO., 1591 Broadway, New York



Absorbs all vibration

## The Supplementary Spiral Spring

No jolts or rebounds. Acts alike under light or heavy loads. Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

SUPPLEMENTARY SPIRAL SPRING CO.  
4527 Delmar Ave., St. Louis, Mo.

## WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY  
SYRACUSE, N.Y.

ALUMINUM      CASTINGS      BRONZE

## OLD TIRES MADE NEW New TIRES MADE Puncture-Proof

### NEWMASTIC FILLING

For Clincher and Single Tubes

Just as Resilient as a Pneumatic  
Just as Safe as a Solid Tire  
How Do We Do It?  
WRITE US AND LEARN

NEWMASTIC TIRE CO.

1303 Michigan Ave., CHICAGO, ILL. Tel. South 1301  
ST. LOUIS, MO.

### EVERYTHING FOR

Man, Motor and "Mechanician"

Specialties and Leather and  
Wool Winter Clothing

A. L. DYKE AUTO SUPPLY CO.

OLIVE AND WALTON STREETS  
ST. LOUIS, MO.

ROBT. F. BRITTON  
Prest. and Mgr.

ROY F. BRITTON  
Secy. and Treas

**This is NOT A FAIRY TALE**

We guarantee to increase the spark in your cylinders by **ONE HUNDRED PER CENT** Through our PATENTED **Steel Armored Ignition Cable**

Adopted by the Leading European Firms  
It is sold cut to the required lengths complete with all terminals. Send us your requirements. Do it now!

**HERZ & CO., 187 Elm St., New York**  
The largest manufacturers of Ignition Material in America.

**ROBERT VOLT - AMMETER**  
For General Battery Testing—Guaranteed Tests both Volts and Amperes.  
**3-VOLTS 6-VOLTS**  
**30-AMPERES 30-AMPERES**  
Send for Catalogue.  
**ROBERT INSTRUMENT CO.**  
63 Shelby St. Detroit, Mich.

**The IGNITION PROBLEM is SOLVED**  
in the "Lacoste" High Tension Magneto for Jump Spark Ignition  
We guarantee this device to be ABSOLUTELY PERFECT.  
We have done the experimenting.  
No BATTERIES. No COIL. No COMMUTATOR.  
Everything for Electrical Ignition.  
LEON RUBAY, Sole U. S. Agents, 140 W. 38th St., N. Y.

**Peerless Automobile Jacks**  
Made in 2 styles and 5 sizes. They are automatic, and their movements are a model of simplicity, are absolutely safe, and cannot drop. Working Handle below center raises, above center lowers. Works at any angle. No. 15, like cut, for vehicles of 2 ton, height 10 inches, rise 7 inches, weight  $\frac{1}{4}$  lbs., price \$2.50. Express prepaid in the United States. **OLIVER MFG. CO.**, 205 S. Desplaines St., Chicago, Ill.

**REST YOUR "Springfield" Auto Lift**  
  
Showing Lift in Position to Receive Car. You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.  
**E. J. DAY & CO.**, Pacific Coast Agents, San Francisco  
**THE SHAWVER CO., Springfield, O.**

**E. F. LESTER, Mf'r.**  
  
**ALUMINUM ARROW BRAND SOLDER AND FLUX.**  
**FAYETTEVILLE, N. Y.**

**STEEL CASTINGS**  
FOR AUTOMOBILES A SPECIALTY  
WRITE FOR SAMPLES AND PRICES  
**MILWAUKEE STEEL FOUNDRY CO.**  
MILWAUKEE, WIS.

## A Glance Tells You



That our Universal Joint and Brake Drum is the acme of specialization. Nothing but the best used. Inquiry will prove this.

**SPICER UNIVERSAL JOINT MFG. CO.**

**PLAINFIELD, N. J.**

Direct factory representatives: K. Franklin Peterson, 166 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.

### Automobile Tire Protectors

For the Prevention of Skidding, Punctures and Wear  
**LEATHER TIRE GOODS CO.**  
Newton Upper Falls, Mass.

**St. Louis** 18-22  
30-34 Actual H. P.



**"RIGS THAT RUN"—We Make Them**  
**ST. LOUIS MOTOR CAR CO.**  
PROSPECT HEIGHTS PEORIA, ILL.

**STA-RITE**  
**DEALERS**  
Do not buy spark plugs of half a dozen concerns, it isn't necessary.  
Condense Your Orders thus obtaining lower prices, and use "Sta-Rites" exclusively. 46 different sizes and styles. Porcelain and Mica,  $\frac{1}{8}$  to  $\frac{1}{4}$  in. Secure July, 1905, price list.  
**The R. E. Hardy Co.**  
225 W. Broadway, N. Y.  
No. 4,  $\frac{1}{8}$ -in. P. J. DASEY No. 34,  $\frac{1}{4}$ -in.  
Porcelain, \$1.50 431 Wabash Ave., Chicago Mica, \$1.75

**"SOLDERENE"**  
A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.  
Sample 10c. Dealers Write for Price.  
**CHAS. A. THOMPSON CO.**  
39 Cortlandt Street New York City

**SPROCKETS**  
Chains and Differentials  
**CULLMAN WHEEL CO.**  
1021 DUNNING STREET, CHICAGO, ILL.

Voltage—4, 6 and 8  
Capacity—  
20 Amp.—Hours  
Prices—\$6, \$9, \$12  
Other styles—  
\$3.25 to \$32.00  
Established 1889  
Catalogues on  
Request.  
**AMERICAN BATTERY COMPANY**  
165 South Clinton St. **CHICAGO, ILL.**

## SKINNER PUMP

200 lbs. pressure with less effort than 50 with any o'her  
Automobile Tires Quickly and Easily Inflated

**\$5 ON APPROVAL**  
AT ALL DEALERS  
LET US SEND YOU A SAMPLE  
Sales Agents  
New York—E. J. Willis Co.  
" " " Chas. E. Miller.  
" " " A. H. Kasner.  
" " " Wm. Wooster Co.  
" " " Judson-Downing Co.  
Boston—Iver Johnson Spgs. Goods Co.  
Boston—Boston Cycle & Sundry Co.  
Baltimore—Coggins & Owens.  
Chicago—Excelsior Supply Co.  
Denver—The Consolidated Sup. Co.  
Detroit—Monnier Auto & Cycle Supply Co.  
Providence, R. I.—Pope Mfg. Co.  
St. Louis—A. L. Dyke Auto Supply Co.  
San Francisco—Van Zandt & McIntyre.  
Rochester, N. Y.—The Sidney B. Roby Co.  
Washington, D. C.—National Elect. Supply Co.

**SKINNER & SKINNER**  
Manufacturers  
4133 Indiana Ave. **CHICAGO**

**DIXON'S GRAPHITE**  
Motor Lubricants  
Interesting booklet and samples FREE.  
**Joseph Dixon Crucible Co.**  
Jersey City, N. J.

**MOTOR CAR SPECIALTIES**  
and SUNDRIES  
WE SELL EVERYTHING  
WRITE FOR CATALOG  
**THE AUTOMOBILE EQUIPMENT CO.**  
252 Jefferson Ave. **Detroit, Mich.**

**Eclipse Pocket Ammeter**  
For General Battery Testing  
0 to 20, 0 to 30 Amperes.  
"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.  
**Eldredge Electric Mfg. Co.**  
Springfield, Mass. U. S. A.

Special Design—Finest Quality—Built-to-Order  
**BODIES AND TOPS**  
**C. P. KIMBALL & CO.**  
315 Michigan Ave. **Chicago**

**BOWSER GASOLENE TANKS**  
We manufacture Gasoline Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our  
**Long Distance Gasoline Storage System**  
"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.  
**S. F. BOWSER & CO., Inc.** XV Ft Wayne, Ind.

**CHAIN TOOLS**  
35c  
THE HUSKY KIND  
SENT PREPAID FOR 45c  
THE MOTOR CAR SUPPLY CO.  
1427 MICHIGAN AVENUE CHICAGO, ILL.

Specify **Auto Cle** on Your  
...an... 1906 Car  
———  
WRITE FOR CATALOG  
———  
**RAILWAY APPLIANCES CO.**  
Old Colony Building :: :: Chicago

**BESTOGO STORAGE BATTERY**  
Essentially different from  
other Lead Batteries  
SEND FOR CATALOG  
Miller Signal Co., 302 JACKSON BOULEVARD,  
CHICAGO

**SPRINGFIELD TOPS**  
3, 4 and 5 Bow  
Aluminum Bodies  
Springfield  
Metal Body Co.  
72 Birne Ave  
Brightwood  
SPRINGFIELD  
MASS.

**Eclipse Tops**  
LOOK BETTER  
WEAR BETTER  
MADE BETTER  
ARE BETTER  
than any others.  
It's an old story with us. We have been  
making good tops  
practically all our  
business lives.  
Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

ORIGINAL MANUFACTURERS OF  
**AUTO TOP MATERIALS**  
We are headquarters for water-proof materials  
of all kinds and make a specialty of materials  
used in the manufacture of Auto Tops, Storm  
Curtains, Slip Covers, etc.  
Write for samples and price list.  
**L. J. MUTTY CO. Boston, Mass.**

People Say The U. S. Is Best  
Lifts any car. Quick Acting. Cannot  
Break. No Loose Parts. No Rattle.  
**PRICE TO INTRODUCE, \$2.25**  
Guaranteed. Patent Applied For.  
**THE U. S. JACK CO.**  
352 S. Claremont Ave.  
CHICAGO.

**CANDY CARBIDE**  
For FRENCH AUTO LAMPS (Impregnation dans le vide)  
Packed only in 10 lb. cans. Price \$2 each.  
Discount to dealers in case lot of 12 cans.  
SOLE MANUFACTURERS  
ACETYLENE GAS ILLUMINATING CO.  
105 WALKER STREET NEW YORK

## NON-FLUID OILS

Are recommended in the instruction books  
of several mfrs of cars. They reduce lubrication  
and repair bills to a minimum. Ask your dealer  
or write us today for free sample; same will be convincing.

**N.Y & N.J. Lubricant Co.**, 79 9th St., San Francisco

## Truffault-Hartford Suspension

Whether you own the lightest Runabout or the  
heaviest Touring Car, you cannot afford to be  
without it. Cars under 1500 pounds, \$40;  
cars over 1500 pounds, \$60; 4 suspensions.

**HARTFORD SUSPENSION CO.**  
69 Vestry Street, NEW YORK CITY

All Leading Automobile Manufacturers Use this Cushion Spring.  
Ask for Samples and Prices.  
**National Spring & Wire Company, Albion, Mich.**

## ALUMINUM

**Aluminum**  
**Automobile**  
**Parts a Specialty**

The Pittsburgh Reduction Company  
Pittsburgh, Pa.

## HOT SPRINGS, ARK.

Only 20½ Hours from Chicago  
VIA THE

## WABASH

You can leave Chicago daily at  
11:30 A. M., on the

### BANNER BLUE LIMITED

the finest train on earth, and  
connect in Union Station, St.  
Louis, with the Hot Springs  
Special on the Iron Mountain,  
reaching Hot Springs next  
morning at 8 o'clock.

Write for free Booklet telling  
all about this popular health  
and pleasure resort.

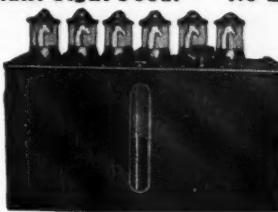
**Ticket Office, 97 Adams St.  
CHICAGO**

**C. S. CRANE, F. A. PALMER,**  
G.P. & T.A., St. Louis. A.G.P.A. Chicago.

**SOMETHING NEW**  
IN BOTH  
AIR AND  
WATER  
COOLED  
**MOTORS** WRITE  
US FOR  
PARTI-  
CULARS  
**FAST MCH. & TOOL WKS.**  
25th and Greenfield Aves. MILWAUKEE, WIS.

## Force Feed Lubrication

Constant Sight Feed. No Liquids



**McCord & Co., 1402-80 Old Colony Bldg., Chicago**

E. J. Day & Co., Pacific Coast Distributors  
324-328 Golden Gate Avenue, San  
Francisco, Cal.

## A PLEASURE TO HEAR THE GABRIEL HORN

Something New and Sensible for  
Automobiles, Auto Boats and Launches



Blows a full, strong blast from exhaust from gasoline-engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.  
Write today for Catalogue, giving prices and full information.

**GABRIEL HORN AND MANUFACTURING CO.**  
970 Hamilton St., Dept. B, CLEVELAND  
New York Branch, 148 West 56th St.

## SPECIAL AUTO PARTS

We make parts from your own design from  
either brass or aluminum

### ON CONTRACT BASIS

Our positive power driven sight feed OILER  
will interest you. Write for description.

**AUTO BRASS & ALUMINUM CO., Flint, Mich.**

**Auto Top Bronzes**  
Bone Separators, Snaps,  
D Rings, Nuts, Screws,  
etc. Also Mud Guards,  
Dash, Tools, Boxes,  
Guard Bolts, etc.  
**C. W. COOPS CO.**  
3 Appleton St., Boston, Mass.

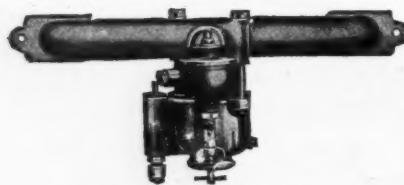
## Standard Roller Bearing Co.

**STEEL BALLS**  
**BALL BEARINGS**  
**Roller Bearings**  
**Automobile Axles**  
Send for Catalogue. PHILADELPHIA

**Lobee Gear Pump**  
Well adapted for Oldsmobile  
and other makes. Works with  
any type of radiator. Easily  
attached. Write for prices.  
**LOBEE PUMP CO.**  
240 Terrace, Buffalo, N. Y.  
**C. E. Miller, Agent,**  
97 Reade St., New York  
**A. L. Dyke Automobile Supply Co.**  
4703 Olive St., St. Louis, Mo.

**ALUMINUM, PHOSPHOR BRONZE,  
BEARING BRONZE AND BRASS  
CASTINGS FOR AUTOMOBILES**  
**HOFELLER BRASS FOUNDRY CO.**  
BUFFALO, N. Y.

# HOLLEY CARBURETORS



Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

## Watch Our List

If you don't find one for your make of car, write us.

### MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	\$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

#### SPECIAL SIZE FOR

Oldsmobile Runabout	\$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00

Write for Circular E. Full information sent on request

**HOLLEY BROS. CO.**  
672 Beaubien St., DETROIT, MICH.

### CHICAGO AUTO AGENCIES

#### Pardee-Ullmann Co.

Agents for

#### Packard and Baker Electric

CARS FOR RENT

1218-1220 Michigan Avenue

Phone 557 South CHICAGO, ILL.

#### The McDUFFEE Automobile Co.

Distributors for

#### Stoddard-Dayton and Royal Tourist

Phone South 1297

1449 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois  
1312 Michigan Avenue, Chicago

#### CADILLAC

Four Cylinder, High Power Touring Car

Light Touring Cars Runabouts Delivery

#### C. A. COEY & CO.

Illinois and Eastern Iowa Agents for the

#### THOMAS FLYER

Always on hand—Bargains in New and Used Cars of all descriptions ::, ::, PHONE SOUTH 1042

1323-1325 Michigan Avenue, Chicago

#### SENSATIONAL PRICES

We are closing out all shrt lines, together with all second hand and shop worn models to make room for 1906 agency goods now coming in—Hoffman tonneau, new, \$500; Murray runabout, \$250; Oldsmobile, \$250; Buckboard, \$200; Gale, \$450; Winton, \$700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Frayer-Miller," "Gale" and exclusive United States importers for the Benz, Mannheim, Germany. Call and see us or send for Catalogs.

MEAD MOTOR CO., 1243-1245 Wabash Ave., CHICAGO

#### TIRE REPAIRS

All makes and types given equal attention

Correspondence solicited

#### RUBBER GOODS REPAIR CO.

89 16th St., Chicago. Phone South 1280

#### LAMBERT

Friction-Drive Automobiles...

12-16-32 h. p., \$1000 to \$2000

Write for Catalogue

#### ADLAND MOTOR CO.

1303 Michigan Ave., Chicago

**POPE** -TOLEDO  
-HARTFORD  
-TRIBUNE  
-WAVERLY

EVERYTHING IN  
**SUPPLIES**  
FOR OWNER AND DEALER  
SEND FOR CATALOGUE NO. 49  
EXCELSIOR SUPPLY CO.  
ESTABLISHED 1876  
CHICAGO

### OLDSMOBILE

Agents and Distributors for Illinois and Wisconsin

#### THE GITHENS BROS. CO.

1528 Michigan Ave., Chicago

Telephone, South 1658

#### GOOD AGENTS WANTED

#### REO

SEND IN APPLICATION

RALPH TEMPLE

309 Michigan Avenue CHICAGO

#### The Importers' Company

AGENTS FOR

#### Richard-Brazier Cars

1400 Michigan Avenue CHICAGO

#### PHILADELPHIA AUTO AGENCY

#### QUAKER CITY AUTOMOBILE CO.

138 to 146 North Broad St., PHILADELPHIA

OLDSMOBILE } Representing { WHITE  
FRANKLIN } POPE-TOLEDO }

The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

#### ROCHESTER AUTO AGENCY

#### United States Automobile Co.

The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for

Thomas Flyer Stevens-Duryea Orient  
Pierce-Arrow Oldsmobile Buick

#### Searchmont Cars Rebuilt

Searchmont Repair Parts of every description for sale.

#### FAIRMOUNT ENGINEERING WORKS

3209 Spring Garden Street, Philadelphia, Pa.

#### ORLANDO F. WEBER CO.

(INCORPORATED)

Distributors for CHICAGO and MILWAUKEE

1322-26 Michigan Ave. 321-25 Fourth St.

Phone 1009 South Phone 2781 Main

# CREDIT

WHERE CREDIT IS DUE

(A Remarkable Letter—Read It)

Absolutely at my own expense and without solicitation, I insert this advertisement in MOTOR AGE so that all who care to be truthfully advised on the automobile tire question may purchase with the assurance of obtaining comfort and economy.

When I ordered my 1905 car at the Chicago Automobile Show, I specified Goodyear detachable 3½-inch tires.

My 1904 experience with another make proved so distressing, uncomfortable and unreliable, that I made a most careful study of the tire question at the New York and Chicago 1905 shows. I was at that time thoroughly satisfied that the mechanical principle of the Goodyear detachable rim was sound. I now know it to be.

My car with five passengers weighs very nearly 3,900 pounds. From June 1st to October 31st my car traveled 7,211 miles. I have six casings and, to start out with, had seven inner tubes. Two of these inner tubes I returned on October 15th just as I had received them from the Goodyear people, being convinced from my season's experience that I would have no use for them this year.

My repair expense for vulcanizing has thus far been less than \$20.00.

My experience has been that of practically perfect comfort, a marvelous showing almost beyond comprehension, no doubt influenced by the following points of perfection.

I have found my Goodyear tires capable of being very easily removed and put on; absolutely watertight when inflated; safely locked when inflated or deflated; no rim cutting if car is driven judiciously with deflated tires; positively no creeping; a quality of rubber that resists many a cut and puncture, which would puncture or burst other tires.

The above qualifications have invariably enabled me to feel safe when starting on a long journey. I go and return, trip after trip, without a stop, having made a dozen runs of 150 miles each day and several of from 175 to 185 miles from morning until night.

Made a round trip to Cleveland from Chicago after my tires had already run 5,000 miles, without even a puncture, although I voluntarily removed one casing before leaving Cleveland because of a cut in the outer fabric which had caused a sand blister.

Most of my motor friends know this story to be an absolute truth. None of them ever heard of my being in tire trouble. I have had a total of four punctures in the 7,211 miles, and in all this mileage I have only put the pump to the valve two or three times, except when I took off my tires for vulcanizing when needed which only occurred on a very few occasions, one tire at a time.

I feel confident that my six tires will carry me at least 5,000 miles more and I would not be surprised if some of my tires would be on the car at the end of next season, as I can really see no particular wear on them.

If anyone doubts the above statement, I should be glad to prove to him that I have given only absolute facts.

With such a showing as above stated, am I not warranted in spending a few dollars for this advertisement so that the merit of a good thing may be known to the thousands of automobilists who are putting in hard work on the tire difficulty?

**ALFRED BERSBACH**  
2568 N. Hermitage Ave., Chicago



## PACKARD ENAMELED IGNITION CABLES NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth? PROOF AGAINST HEAT, GREASE, OILS AND WATER  
THE PACKARD ELECTRIC COMPANY  
WARREN, OHIO, U. S. A.

## Automobile Fluids

### Non-freezing Fluid

Guaranteed.  
Thin as water.  
Cools as well as water.  
Circulates as well as water.  
Freezes at 36 below zero.  
No acid. Won't corrode or damage system in any way more than water.

### Rubber Fluid

Small Tube, 25c. 1-4 pt., 75c.  
Guaranteed quicker and better than vulcanizing.  
Repairs casings as well as tubes.  
Hot roads won't affect patches.  
Don't throw away old casings when we furnish the canvas and fluid rubber.

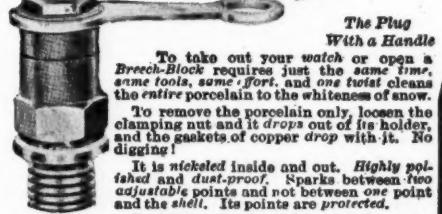
### Body Fluid

Feeds the varnish; don't deaden it.  
Removes all scratches.  
Easily applied and makes body look like new.

**SPECIAL PRICES TO DEALERS**

**MARION FLUID CO.** FIRST & ADAMS STS.  
MARION, IND.

## The "Breech-Block" Plug.



It is nickelated inside and out. Highly polished and dust-proof. Sparks between two adjustable points and not between one point and the shell. Its points are protected.

Porcelains are hand turned and so perfectly glazed that soot cannot stick to them. Their threads are cut to perfection, and every particle of the idea of cheapness is left out of them. Can you think of a way to improve them regardless of cost?

Postpaid, Anywhere, \$2. Booklet Free. Made by EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

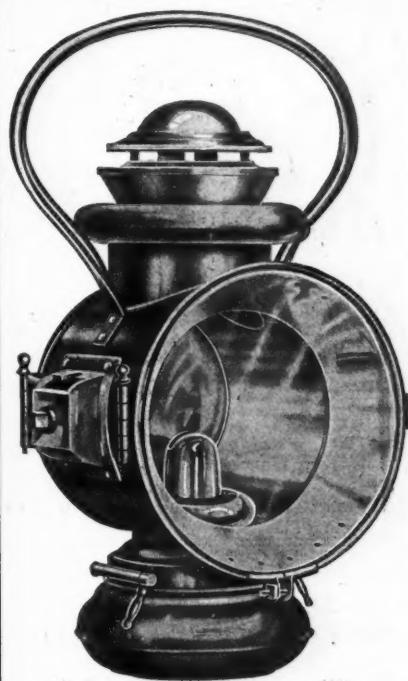
### If You Are a Judge of Good Plugs

so much the better, but if you are not, it really does not matter, for you've only to try a "Never-Miss" to realize that

## NEVER-MISS Spark Plugs

are the perfection of ignition. Mica (Plugs) Porcelain. They are the one plug that satisfies. They take and bring you back. The 1906 Never-Miss (patent applied for) is the best. Any size, any car, any where, \$1.50 and worth it. Coils, Battery Connections and Chain Tools. Just get acquainted with Never-Miss. The acquaintance will be lasting, our word for it. 1 Doz. Battery Connections free with 2 Plugs. Fully guaranteed. Write today. The longer you wait the more good spark plug enjoyment do you "Miss." See the point?

**Never-Miss Spark Plug  
Co., Lansing, Michigan**



## THE HAM GOLD BLAST AUTO LAMPS

"THE LAMPS THAT LIGHT THE ROAD"

### MR. MANUFACTURER:

Don't close your lamp contract for 1906 until you look over our line. We have no competition in light giving and burning qualities, and our lamps will surely interest you.

### MR. DEALER:

Isn't it worth something to sell your customers lamps that will not only satisfy them, but will bring them back to tell you what a fine light they give, how steadily they burn in the strongest winds and over the roughest roads, and what a good fellow you are for selling them good lamps. They'll tell their friends about it, too.

### MR. AUTOMOBILIST:

Are you discouraged with the oil lamp proposition? If you are, we know you haven't tried the

## HAM COLD BLAST AUTO LAMPS

because they are a delight to the most critical. They are strongly built, handsome in appearance, give a powerful light, and are always reliable, as they are wind proof and will not jar out. Never smoke, consequently the interior is always bright and clear, and there is no odor.

WRITE FOR BOOKLET

**C. T. HAM MFG. CO.**  
ROCHESTER, N. Y.

**For your Garage**  
Machine Wrenches, all kinds and sizes, milled openings.

**For your Auto**  
Our General Service Wrench, light, long, and strong. Get our illustrated Wrench Booklet.

**The Billings & Spencer Co. : HARTFORD CONN.**

**You will find**

lots of advertisements of coils, plugs, circuit-breakers, switches, etc. in the papers, you will recognize them by their lack of arguments. Their products have no special merit, the makers got to dig up the most trivial points, which every article of this kind should possess.

We will send you a book of arguments free: Our new catalog.

**WHAT WE HAVE:**

The HERZ TIMER—16 models, to fit any make of motor: Remember: It's TOOLSTEEL vs. TOOLSTEEL.  
Bougie Mercedes—double stone.  
Herz-Distributor—1 coil for all cylinders.  
Guenet Coils—Carpentier-Interrupter.  
New prices—Single, \$16; double, \$29; triple, \$38; quad, \$59.

A line of switches of original design; contacts dust-proof covered.  
Detachable terminals.  
Wire terminals with groove.  
Special ignition cables and wires.  
Everything for the ignition.  
One grade: The Best.

**HERZ & CO.** Civil Engineers  
187 Elm Street, New York

Write for free Vademecum of Ignition.



**CONTINENTAL MOTORS**  
Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by

**CONTINENTAL MOTOR MFG. CO.**  
Formerly AUTOCAR EQUIPMENT CO.  
240-244 W. LAKE ST., CHICAGO

**BEWARE OF IMITATIONS**  
Also Marine Reverse Gears and Propellers. Send for Catalog.  
PETERSON & DRAPER  
Direct Factory Representatives.

**VALVELESS-PUMPS  
WITHOUT STUFFING BOXES OR SPRINGS**

All Your Oiling Troubles Eliminated  
Any Number of Pumps  
Write for Catalogue

**Madison-Kipp Lubricator Co., Madison, Wis.**

**MISCELLANEOUS.**

Advertisements under this head 3 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

**PACKARD FOR SALE**—Model L 4-cylinder, changed at their factory to a two-man car; rear seats can be replaced if desired; has shifting top, glass front, tire box back of rear axle; large carrying capacity back of seats; tires and everything in "A1" condition. Address "Flyer," care MOTOR AGE, Chicago.

**FOR SALE**—Autocar runabout, excellent condition, \$550; can be seen in Chicago any time. Address Box 15, MOTOR AGE.

**FOR SALE**—10 H. P. transmission, \$30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

**FOR SALE**—Olds runabout in good condition; consider no trade; a bargain at \$275. R. M. Walker, Monroe City, Mo.

**FOR SALE**—Oldsmobile runabout in A1 condition; equipped with top, lamps, for \$200. Must go at once. F. L. Schlosser, Flagg, Ill.

**FOR SALE**—1905 Franklin type A, detachable tonneau; Franklin red; used but a few months; good as new, looks new; perfect condition guaranteed in every detail; equipped with full set of lamps, front and rear, Vedder odometer, one complete new tire; reason for selling, the owner desires to buy a car carrying a larger number. Bloomsburg Auto Co., Lock Box 517, Bloomsburg, Pa.

**FOR SALE**—Packard model L, in A1 condition, fully equipped with lamps; price \$2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price \$2,600. Also model C Winton, in A1 condition; run less than 2,000 miles; tires all good; equipped with Shelby carburetor; former owner has purchased model K Winton; can be bought for \$1,000 if taken at once. Bates Odenbrett Auto Co., Milwaukee, Wis.

**FOR SALE**—Toledo steam automobile; two 16" fire tube boilers. Wanted, one White flash boiler and a four-cylinder marine engine. Spencer Bros., Charleroi, Pa.

**HUSSEY DROP FORGINGS  
AND UNIVERSAL JOINTS**  
Used by the largest American manufacturers. Get our estimates on all kinds of automobile work.

**HUSSEY DROP FORGE & MFG. CO.**  
2020 Axell Street CLEVELAND, OHIO

**Atwater Kent Timer**  
"No Wobble."  
"No Adjustments."  
"Two Bearings."  
"Contacts Run in Oil and Entirely Enclosed."  
"Durable Electrically and Mechanically."  
"Copied from None."  
Atwater Kent Mfg. Works,  
115 North Sixth St, Philadelphia, Pa.

For Boiled Down Information About  
**AUTOMOBILES & WELCH CARS**  
in general in particular  
—address—  
**WELCH MOTOR CAR CO., DETROIT, MICH.**  
Factory, Pontiac, Mich.

**DIAMOND WRAPPED TREAD  
TIRES**  
DIAMOND RUBBER CO., AKRON, OHIO

**FOR SALE**—Garage established with Winton and Cadillac agencies for 1906 at Spokane, Wash. Fine location and a good storage business. Will sell at invoice or will consider partnership. Address G. W. Miller, Broadway and Madison Sts., Seattle, Wash.

**FOR SALE**—New 10 H. P. double cylinder machine, clincher tires, for 4 passengers, nearly completed; material cost \$700; \$300 takes it. New set of axles complete, artillery wheels, with clincher tires; \$100 takes these. Box 158, Perry, Mich.

1905 RAMBLER, surrey type I, seats five people, extension cape top, glass front, Prest-O-Lite tank, gas and oil side and tail lamps, all for \$875. Demonstration will be given. E. W. Siefer, Shelbyville, Ind.

**FACTORY TO LET**

Owing to the fact that we have removed our lantern plant into more spacious quarters in our new factory building, just completed, our factory No. 2 at Syracuse is for rent. It is a two-story attic building with extra high ceilings. It contains on the ground floor 19,871 sq. ft.; second floor, 18,815 sq. ft.; attic, 4,320 sq. ft.; total, 43,006 sq. ft. of floor space; 125 horse power steam engine; two 85 horse power steam boilers; equipped with sprinkler system. Adjacent to canal and railroad; switch in yard. Can furnish 30,400 sq. ft. yard space. Location, Wilkinson St. and Leavenworth Ave., Syracuse, N. Y. Mention MOTOR AGE. R. E. DIETZ COMPANY, Syracuse, N. Y.

**FOR SALE**—1904 Winton with canopy top, plate glass front, 4 lamps and tools complete; guarantee perfect order; sell for \$1,000. Wm. T. Sigler, Piedmont, W. Va.

**FOR SALE**—One No. 5 Barns lathe, with full equipment, \$70; A1 condition. T. H. Bolte, Kearney, Neb.

**SECOND-HAND** Dow and Knoblock spark coils, good working order, \$3 each; one new inner tube for 36x3 single tube tire, \$3; two G & J 28x3 clincher with inner tubes, \$10 each, worn a little; Luchenheimer mixing valve,  $\frac{3}{4}$  in., new, \$2.50. C. W. Lindsay, Anthon, Ia.

**FOR SALE**—New double opposite cylinder, 16 horsepower gasoline engine, spark coil and carburetor; cost \$450. Full particulars, C. E. York, Grand Rapids, Mich.

**FOR SALE**—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; \$425. C. W. Travis, Evansville, Ind.

**NEW YORK AUTOMOBILE SALESMAN**

Now branch manager, open to engagement Jan. 1st; exceptional qualifications and wide acquaintance throughout eastern states. Address Eastern, MOTOR AGE.

**WANTED**—1904 tonneau car; must be a gain. F. S. Wiley, West Salem, Ill.

**FOR SALE**—Knox surrey; two-cylinder 16 h. p. engine, full leather top, all accessories; in first class condition; perfect running order; one of the finest cars ever turned out; lots of power; easy riding; perfect air cooled engine for all seasons and every kind of weather; a thoroughly efficient high grade car and will be sold at a ridiculously low price. If interested, write for full description. Knox Surrey, MOTOR AGE.

**FOR SALE**—1904 Model A Cadillac for immediate sale, \$350; machine in fine order, practically as good as new; will demonstrate at any time; big bargain. Address 36 South First Ave., Marshalltown, Iowa.

**FOR SALE**—Winton "C," 5 lamps, generator and extras; must sell quick; \$1,300 cash; will demonstrate. M. A. C., MOTOR AGE.

**WANTED**—To trade a 16 H. P. double opposed model touring car, detachable tonneau, sliding gear transmission, 3 speeds, head and reverse, 32x4 tires, in fine condition; for 24 to 40 H. P. 4-cylinder car; will give reasonable cash difference. Senate Club, No. 106 Front St., Marietta, Ohio.

**PACKARD**, 15 H. P., automobile, \$200; complete with all accessories, lamps, horn, extra tires; in first class running condition. A. J. Houle, South East St., Holyoke, Mass.

**FOR SALE**—Toledo steamer, \$95; will trade. 16 E. Washington St., Huntington, Ind.

**FOR SALE**—Rambler runabout, in first class condition, \$250; must sell. Chas. Newcomb, Huntington, Ind.

**FOR SALE**—One new Oldsmobile, just from the factory; will sell at a bargain; also one Elmore, second-hand. Address Green's Fork Auto Agency, Green's Fork, Ind.

#### AUTOMOBILE SCHOOL

##### CHICAGO SCHOOL OF MOTORING.

The original Automobile School in Chicago. One hundred and eighty graduates the past year, to whom we refer upon request.

Automobile owners, prospective buyers and young men wanting to become expert chauffeurs will save a great deal of money and a lot of worry by studying the mechanism, care and repair of gasoline automobiles in our shop, where all parts are open so you can see how they are made and how they operate. Give thorough and practical instruction. Competent chauffeurs supplied.

##### CHICAGO SCHOOL OF MOTORING, 264 Michigan Ave. Phone Har. 119.

**FOR SALE OR TRADE**—2 sections, 1,280 acres of good ranch land in Presidio county, Texas; will trade for automobiles. Alliance Motor Car Co., Alliance, Ohio.

**WANTED**—1905 two-cylinder runabout in exchange for Rambler Model E. Address F. P., care MOTOR AGE.

**FOR SALE**—6 H. P. air cooled motor, \$75; 10 H. P. water cooled motor, \$85, new; 15 tube radiator, \$10; hood, \$12; McCanna 4 feed lubricator, new, \$15; No. 10 Rose headlight, \$12. Any of these parts sold separately. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

**FOR SALE**—Automobile, \$150. C. E. Shook, Waterloo, Iowa.

**WANTED**—Man thoroughly familiar with Stevens-Duryea cars to take entire charge of repair department. State experience, references, age, salary expected, etc. Address S. D., care MOTOR AGE.

**WANTED**—A first class superintendent for an automobile accessory factory; must be thoroughly conversant with all high grade modern machine tools. Address, stating experience and salary expected, Manufacturer, care MOTOR AGE.

**FOR SALE**—Autocar, four-cylinder, good order, equipped with cape top, gas lamps, odometer, etc.; price \$1,650. W. T. K., 279 Washington St., New York City.

**REWARD** offered to any one locating a type 7 Searchmont touring car, factory number 181, green body, dark brown running gear. Address Stolen, care MOTOR AGE.

**WILL TRADE** quarter section smooth land in western Kansas wheat belt for automobile. F. L. Martin, Hutchinson, Kan.

**FOR SALE**—Rambler Model E, good order, cheap. Address D. McC., care MOTOR AGE.

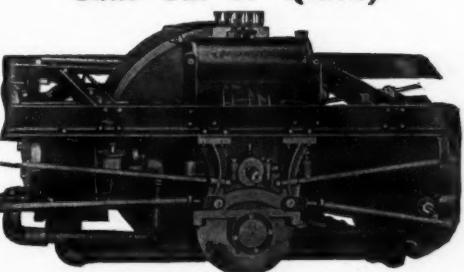
## EQUALIZED SPRING TRUSSSED FRAME

OF THE

# 1906 Logan

That Car of Quality

One of  
Many  
Points  
of  
Strength



One of  
Many  
Reasons  
for  
Comfort

PATENT PENDING

We are ready to talk business for 1906. :: Better write to-day.

## THE LOGAN CONSTRUCTION CO. CHILlicothe, Ohio

#### AUTOMOBILE DEALERS EVERYWHERE—

We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

**FOR SALE**—A 1906 White Steamer, side entrance, never used and absolutely perfect; owner leaving for Europe soon. J. M. Shelley, Omaha, Neb.

**WANTED**—Cash buyer for 1905 Olds runabout, excellent condition. Write for particulars, Box 58, R. F. D. No. 2, Manchester, Iowa.

**FOR SALE**—Remodeled type eight Autocar. Four cylinder 20 h. p. Rutenber motor. Splitdorf dash coil and commutator, Shebler carburetor, McCord dash, automatic oiler, six lamps, baskets, storm covers and extra parts; tires all new, 32x3½; will carry five passengers anywhere; \$1,250. 1406 Oxford St., Philadelphia.

**WANTED**—Auto in exchange for old plantation in Scott Co., Tenn.; clear title; no encumbrances. Address Box 531, St. Ansgar, Ia.

**FOR SALE**—Late '04 Packard, in fine condition, with \$300 worth of extras; extension top, headlights, speedometer, odometer; \$2,100 f. o. b. Kansas City; run 4,300 miles. N. T. Haynes, 3808 Central St., Kansas City, Mo.

**FOR SALE**—At a bargain, one 1905 White Steamer, complete with cape top, hampers, full lamp equipment, generator and lamps; been used little, practically new, in first class running shape; 3 extra cases, 2 extra inner tubes; full equipment cost about \$2,800; will sell for \$1,600 if taken at once. Will gladly demonstrate. Jacob Roth, Erie, Pa.

**AGENTS WANTED**—For our automobile and marine engines. Spark plugs, 50c and \$1, direct to consumer. Coils, carburetors and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

**FOR SALE**—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

**FOR SALE**—A 1905 Model "F" Knox touring car, with glass front, 32x4 tires; guaranteed to be in A1 condition; will sell cheap for cash. Address W. E. W., 219 South 6th St., Minneapolis, Minn.

**FOR SALE**—Marble Swift friction transmission, lever, joints, brake; new; bargain. 729, 164 Dearborn, Chicago.

**FOR SALE**—1905, 30-35 H. P. Locomobile; perfect condition; satisfactory demonstration; owner had also 1904 Locomobile; has ordered 1906 car; write us. Capen Motor Car Co., St. Louis, Mo.

**SPARK-PLUGS**—Large lot for sale at low figures. The best plug on the market. Standard or metric. Will job whole lot or sell in smaller quantities. Write for price, stating number wanted. Mechanical Plug Company, 3924 Olive St., St. Louis, Mo.

**FOR SALE**—One Olds runabout, one four-cylinder, 20 H. P. gasoline car; eight steam cars, including runabouts and touring cars; also steam delivery wagons; all in first-class running order. Write for particulars if interested. K. A. Grout, Orange, Mass.

**Wanted** Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our Tom Tire Pump fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

**NYBERG AUTOMOBILE WORKS, CHICAGO, ILL.**  
Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 4.

## CHICAGO and CINCINNATI

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

### MONON--C. H. & D.

Ride this way once and you'll ride again—we think.

Chas. H. Rockwell,  
Traffic Manager  
Frank J. Reed,  
Gen'l Pass. Agt.  
CHICAGO

When  
your  
Auto  
isn't  
just  
right,  
use  
the

# STILLSON AUTOMOBILE WRENCH

IT WILL OUTLAST ANY OTHER TOOL  
IN YOUR TOOL-BOX and GIVE SATIS-  
FACTION AT ALL TIMES



The original, most efficient and durable.  
Used exclusively in all up-to-date gar-  
ages, machine shops and all places  
where the best mechanics are em-  
ployed. Sold by all leading  
auto-supply jobbers and dealers.

WRITE FOR  
CIRCULAR AND PRICES

**Walworth**  
**Mfg. Co.**

Boston  
Mass.  
U. S. A.

## COMPLETE LISTS of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 108 Fulton St., New York City

## Diamond Chains

Our chains outwear all others.  
Replace your worn-out chain  
with a "Diamond," which fits  
any standard sprocket.

DIAMOND CHAIN & MFG. CO., Indianapolis



## THE SUPERIORITY OF AMERICAN COILS

is widely known

WE MAKE ALL STYLES  
Neat, Compact, Efficient

Write for 1905 Catalog  
Showing our complete line

American Coil Co.

FOXBORO, MASS.

Auto Supply Co., 1662 Broadway,  
New York Agent

Geo. H. Bill, 306 McAllister  
St., San Francisco, Cal.

## Hyatt Roller Bearings

TURN FRICTION INTO ENERGY

HYATT ROLLER BEARING CO.

Harrison, New Jersey

ARE YOU FROM MISSOURI?

## LEA TIRE PUMP

Saves your tire bills. The  
"Lea" pumps tires up evenly  
and lessens wear. Easy to op-  
erate, too.

Write for illustrated  
book B. Inquire about  
our proposition to  
agents.

William S. Jones  
112 N. Broad Street  
Philadelphia

Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

## INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co.	79	E. H. V. Co.	58	London Auto Supply Co.	74	Royal Battery Co.	68
Adams Company	66	Eclipse Buggy Co.	79	Long Mfg. Co.	64	Royal Motor Car Co.	72
Adland Motor Co.	80	Edmunds & Jones Mfg. Co.	42	McCord Co.	79	Rubay, Leon.	78
Allyne Brass Mfg. Co.	75	Eldredge Electric Mfg. Co.	78	McDuffee Automobile Co.	80	Rubber Goods Repair Co.	80
American Ball Bearing Co.	69	Electric Storage Battery Co.	77	Madison-Kipp Lubricator Co.	82	Rushmore Dynamo Works	57
American Battery Co.	78	Electric Vehicle Co.	68	Marion Fluid Co.	81	St. Louis Motor Car Co.	78
American Coil Co.	84	Elmwood Mfg. Co.	72	Matheson Motor Car Co.	66	Shawver Co.	78
Apperson Bros.	76	Excelsior Supply Co.	40-80	Maxwell-Briscoe Co.	55	Skinner & Skinner.	78
Astor Company	77	Fairmount Engineering Wks.	80	Mead Motor Co.	80	Spicer Universal Joint Mfg. Co.	78
Atwater-Kent Co.	82	Fast Machine & Tool Co.	79	Mezgar, C. A.	70-75	Springfield Metal Body Co.	79
Auto Brass & Aluminum Co.	79	Firestone Tire & Rubber Co.	56	Michelin Tire, Amer. Branch.		Standard Roller Bearing Co.	79
Auto Directories Co.	84	Ford Motor Co.	Cover	Miller, Charles E.	72	Stanley, John T.	70
Automobile Equipment Co.	78	Franklin, H. H. Mfg. Co.	35	Miller Signal Co.	79	Steel Ball Co.	69
Badger Brass Mfg. Co.	67	G. & J. Tire Co.	62	Milwaukee Steel Foundry Co.	78	Stevens, J. Arms & Tool Co.	39
Baker Motor Vehicle Co.	59	Gabriel Horn Mfg. Co.	79	Mitchell Motor Car Co.	41	Stolp Mfg. Co.	73
Baldwin Chain & Mfg. Co.	76	Garford Mfg. Co.	71	Moline Automobile Co.	72	Streit, A. Machine Co.	75
Ball-Fintze Co.	76	Gilbert Mfg. Co.	76	Monon Route.	83	Supplementary Spiral Spring Co.	77
Bartholomew Co.	76	Githens Bros.	80	Morgan & Wright.	Cover	Synnesveld Machine Co.	74
Beaver Mfg. Co.	65	Goodrich, B. F. Co.	60	Mosler, A. R. & Co.	76	Syracuse Aluminum & Bronze Co.	77
Bersbach, Alfred.	80	Goodyear Tire & Rubber Co.	53	Motor Age.	50	Temple, Ralph.	80
Billings & Spencer.	82	Gray-Hawley Mfg. Co.	70	Motor Car Specialty Co.	84	Thomas, E. R. Motor Co.	47
Bloomstrom Motor Co.	43	Ham, C. T. Mfg. Co.	81	Motor Car Supply Co.	79	Thompson, Chas. A. Co.	78
Boston Auto Gage Co.	77	Hardy, R. E. Co.	78	Moto Clincher Tire & Rubber Co.	75	Trebret Gas Engine Co.	68
Boswer, S. F. & Co.	79	Hartford Rubber Works.	52	Mutty, I. J. Co.	79	United States Automobile Co.	86
Briscoe Mfg. Co.	81	Hartford Suspension Co.	79	National Motor Vehicle Co.	48	U. S. Jack Co.	79
Brown, S. N. & Co.	73	Haynes Automobile Co.	61	National Spring & Wire Co.	79	Veeder Mfg. Co.	74
Brown, W. H.	77	Herz & Co.	78-82	Never-Miss Spark Plug Co.	81	Vesta Accumulator Co.	75
Buckeye Mfg. Co.	66	Hine-Watt Mfg. Co.	75	Newmastic Tire Co.	77	Wabash Railway Co.	79
Byrne-Kingston Co.	54	Hoeffeler Brass Foundry Co.	79	N. Y. & N. J. Lubricant Co.	79	Warner Instrument Co.	67-74
Cadillac Co. of Ill.	80	Hoffheimer Soap Co.	71	Nordyke & Marmon Co.	38	Way Muffler Co.	44
Cadillac Motor Car Co.	51	Holley Bros.	80	Nyberg Automobile Co.	83	Wayne Automobile Co.	51
Canedy, Earl.	81	Hussey Drop Forge & Mfg. Co.	82	Olds Motor Works.	36-37	Weber, O. F. & Co.	80
Carr, F. S.	68	Hyatt Roller Bearing Co.	84	Oliver Mfg. Co.	78	Weed Chain Tire Grip Co.	73
Champion, Albert Co.	77	Imperial Brass Mfg. Co.	75	Oliver Typewriter Co.	77	Welch Motor Car Co.	82
Coey, C. A. & Co.	80	Imperial Wheel Co.	63	Packard Electric Co.	81	Western Tool Works.	66
Columbia Lubricants Co.	74	Importers Co.	80	Packard Motor Car Co.	Cover	Western Electric Instrument Co.	76
Continental Caoutchouc Co.	55	Jackson Automobile Co.	62	Pantasota Co.	58	Wheeler, F. H.	60
Continental Engine Co.	73	Jeffery, T. B. & Co.	Cover	Pardee & Ullmann.	80	White Sewing Machine Co.	61
Continental Motor & Mfg. Co.	8?	Kilgore Air Auto Cushion Co.	67	Pederson, J. D.	76	Whitlock Coil Pipe Co.	71
Coops, C. W. Co.	79	Kimball, C. P. & Co.	78	Pennsylvania Rubber Co.	59	Whitney Mfg. Co.	69
Corbin Motor Vehicle Co.	45	Knox Automobile Co.	70	Peerless Motor Car Co.	49	Willard Storage Battery Co.	73
Corwin Mfg. Co.	65	Kokomo Rubber Co.	67	Pierce, Geo. N. Co.	Cover	Willis, E. J. Co.	77
Cramp, Wm. & Sons Ship & Engine Building Co.	73	Leather Tire Goods Co.	78	Pittsburg Reduction Co.	79	Winkley Co.	74
Cullinan Wheel Co.	78	Lester, E. F.	78	Pope Mfg. Co.	53	Winton Motor Carriage Co.	73
Dayton Electric Mfg. Co.	73	Link Belt Machinery Co.	54	Premier Motor Mfg. Co.	64	Witherbee Igniter Co.	76
Dayton Motor Car Co.	63	Lloyd Iron Roofing & Paint Co.	71	Prest-O-Lite Co.	65	Wolverine Automobile Co.	52
Diamond Chain & Mfg. Co.	84	Lobee Pump Co.	79	Quaker City Automobile Co.	80	Commercial Vehicle Co.	52
Diamond Rubber Co.	82	Locomobile Co. of America.	65	Railway Appliance Co.	79	Worthington Automobile Co.	56
Dixon, Jos. Crucible Co.	78	Loftis Bros. Co.	46	Rainier Co.	34		
Dyke, A. L. Auto Supply Co.	77	Logan Construction Co.	83	Robert Instrument Co.	78		
				Rose Mfg. Co.	73		
				Royal Battery Co.	68		

1000 MILES  
WITHOUT A SINGLE  
ADJUSTMENT

won the GLIDDEN TROPHY for the

# PIERCE

There can be no more conclusive proof of the superiority of the Pierce Great Arrow chassis for touring purposes. An American car for American roads. The Pierce is the triumphant result of six years' experience with the finest materials and a thorough knowledge of American conditions.

The George N. Pierce Company  
BUFFALO, N. Y.

Members of Association of Licensed Automobile Manufacturers

*Manufacturers of Pierce Cycles*

# Rambler



## Don't Stable Your Car Because The Snow Flies

Motoring on a keen, bright day when the air is clear and bracing, is one of the greatest pleasures of the year. But the car must be right, there must be no annoying stops for tinkering and adjustment when the fingers become cold and the temper hot.

Insure the pleasure of your ride by using a RAMBLER, the car of staunch dependability that you don't have to tinker with.

The car of power and simplicity that obeys your will and serves you all the time.

Our Catalogue or The Rambler Magazine will tell you how and why. Both are at your service.

**THOMAS B. JEFFERY & COMPANY :: KENOSHA, WIS.**

BRANCHES: CHICAGO MILWAUKEE BOSTON PHILADELPHIA SAN FRANCISCO

NEW YORK AGENCY: 134 West 38th Street

Representatives in all leading cities